

**EPA Superfund
Record of Decision:**

**NL INDUSTRIES
EPA ID: NJD061843249
OU 02
PEDRICKTOWN (OLDMANS TOWN, NJ
09/27/1991**

09/27/91

REGIONAL ADMINISTRATOR

#SNLD

SITE NAME, LOCATION AND DESCRIPTION

THE NL INDUSTRIES, INC. (NL) SITE IS AN ABANDONED, SECONDARY LEAD SMELTING FACILITY SITUATED ON 44 ACRES OF LAND ON PENNS GROVE-PEDRICKTOWN ROAD, IN PEDRICKTOWN, SALEM COUNTY, NEW JERSEY. THE SITE IS BISECTED BY A RAILROAD AND INCLUDES A CLOSED 5.6-ACRE LANDFILL. THE SOUTHERN 28 ACRES CONTAIN THE INDUSTRIAL AREA AND LANDFILL ACCESS ROAD (FIGURE 1). NL MAINTAINS THE LANDFILL AREA AND OPERATES THE LANDFILL'S LEACHATE COLLECTION SYSTEM.

THE SITE OVERLIES THE CAPE MAY AQUIFER. THE WEST AND EAST STREAMS, WHICH ARE INTERMITTENT TRIBUTARIES TO THE DELAWARE RIVER, BORDER AND RECEIVE SURFACE DISCHARGES FROM THE SITE. THE NEAREST HOME IS LESS THAN 1000 FEET FROM THE SITE AND B.F. GOODRICH AND THE TOMAH DIVISION OF EXXON, INACTIVE FACILITIES, ARE NEIGHBORING INDUSTRIAL FACILITIES.

DEMOGRAPHY AND LAND USE

THE 1980 US CENSUS REPORTED THE TOTAL POPULATION OF OLDMANS TOWNSHIP, IN WHICH PEDRICKTOWN IS LOCATED, AT 1,847.

THE SITE IS PART OF AN AREA THAT IS ZONED FOR DEVELOPMENT AS AN INDUSTRIAL PARK. THIS AREA INCLUDES OPERATIONS OF THE FOLLOWING MAJOR CORPORATIONS: AIRCO (INACTIVE FACILITY); B.F. GOODRICH (INACTIVE FACILITY); BROWNING-FERRIS INDUSTRIES (INACTIVE FACILITY); AND EXXON, TOMAH DIVISION (INACTIVE FACILITY). TO THE NORTH OF THE INDUSTRIAL AREA, BETWEEN THE SITE AND THE DELAWARE RIVER, IS A MILITARY BASE AND AN ARMY CORPS OF ENGINEERS DREDGE SPOIL AREA. THE INDUSTRIAL PARK AREA IS BORDERED BY A COMBINATION OF OPEN, RESIDENTIAL AND AGRICULTURAL LANDS. THE RESIDENCES ARE ONE- OR TWO-STORY, SINGLE-FAMILY HOMES. AGRICULTURAL LANDS PRODUCE A VARIETY OF CROPS, INCLUDING TOMATOES, CORN, SOYBEAN AND ASPARAGUS.

HYDROGEOLOGIC CHARACTERISTICS

THE LOCAL AQUIFER SYSTEM CAN BE SEPARATED INTO THREE AQUIFERS (UNCONFINED, FIRST CONFINED AND SECOND CONFINED) ON THE BASIS OF GROUNDWATER ELEVATIONS AND LITHOLOGY AROUND THE SITE. THE SITE GEOLOGY CONSISTS OF THICK AND INTERFINGERING STRATA OF CLAY AND SAND. THE CLAY MEMBERS FUNCTION AS AQUITARDS IN SOME SECTIONS. THE DISCONTINUITY OF THE UPPER CLAY MEMBER PROVIDES THE POTENTIAL FOR THE UNCONFINED AQUIFER TO LEAK INTO THE FIRST CONFINED AQUIFER. THE OBSERVED THICKNESS OF THE MIDDLE CLAY MEMBER APPEARS TO BE GREATER THAN 20 FEET, AND ITS REPORTED PRESENCE ON ADJACENT INDUSTRIAL PROPERTIES SUGGESTS THAT THIS AQUITARD EXTENDS ACROSS THE SITE.

GROUNDWATER FLOW IN THE UNCONFINED AQUIFER IS PREDOMINANTLY IN A NORTHWEST DIRECTION, HOWEVER, DISCONTINUOUS LAYERS OF SANDS AND CLAYS CAUSE LOCALIZED VARIATIONS IN FLOW DIRECTION. GROUNDWATER IN THE FIRST CONFINED AQUIFER APPEARS TO FLOW IN A WESTERLY DIRECTION. GROUNDWATER FLOW IN THE SECOND CONFINED AQUIFER APPEARS TO BE IN A EASTERLY DIRECTION. THIS SUGGESTS THAT THE INDUSTRIAL SUPPLY WELLS NEIGHBORING THE SITE MAY BE CONTROLLING THE SECOND CONFINED GROUNDWATER FLOW UNDER THE SITE.

CLIMATE

THE CLIMATE OF THE SITE IS LARGELY CONTINENTAL, CHIEFLY AS A RESULT OF THE PREDOMINANCE OF WINDS FROM THE INTERIOR OF NORTH AMERICA. CLIMATOLOGIC DATA FOR SALEM COUNTY ARE COLLECTED BY THE NEW JERSEY DEPARTMENT OF AGRICULTURE. THE 1987 ANNUAL REPORT STATES THAT SALEM COUNTY RECEIVES AN AVERAGE OF 42.81 INCHES OF RAINFALL PER YEAR. THE REGION EXPERIENCES AN AVERAGE TEMPERATURE OF 55.2 DEGREE F, WITH A MONTHLY AVERAGE LOW OF 33 DEGREE F OCCURRING IN JANUARY AND A MONTHLY AVERAGE HIGH OF 77 DEGREE F OCCURRING IN JULY. THE WIND ROSE FOR PHILADELPHIA, PA AIRPORT INDICATES THAT MORE THAN 50 PERCENT OF THE WIND OVER THREE MILES/HOUR IS FROM THE WEST (NORTH NORTHWEST TO SOUTH SOUTHWEST).

SOIL

THE SOILS UNDER THE NL SITE ARE CHARACTERIZED BY A THIN (1 TO 2 INCHES) LAYER OF TOP SOIL CONTAINING LITTLE PLANT MATERIAL OVER A TANNISH-BROWN SANDY SOIL. IN ADJACENT WOODED AREAS, A THICK HUMUS LAYER IS OVERLAYING THE SOIL. THIS HUMUS LAYER IS GENERALLY SIX TO EIGHT INCHES THICK. THE SOIL UNDER THE HUMUS LAYER IS TANNISH TO REDDISH BROWN. SOILS ON ADJACENT AGRICULTURAL LANDS HAVE TWELVE TO FOURTEEN INCHES OF RICH, BLACKISH-BROWN TOPSOIL WITH AN UNDERLYING TANNISH-BROWN, SANDY SOIL.

DRAINAGE AND SURFACE WATER

AN UNNAMED TRIBUTARY TO THE DELAWARE RIVER IS LOCATED ALONG THE WESTERN PROPERTY BOUNDARY, HENCEFORTH REFERRED TO AS THE WEST STREAM IN THIS DOCUMENT. A SECOND STREAM, REFERRED TO AS THE EAST STREAM, RUNS APPROXIMATELY 1000 FEET EAST OF AND PARALLEL TO THE SITE'S EASTERN PROPERTY BOUNDARY. BOTH STREAMS MERGE NORTH OF ROUTE 130 AND ULTIMATELY DISCHARGE TO THE DELAWARE RIVER, WHICH IS APPROXIMATELY 1.5 MILES FROM THE SITE.

#SHEA

SITE HISTORY AND ENFORCEMENT ACTIVITIES

SITE HISTORY

IN 1972, THE FACILITY BEGAN THE OPERATION OF RECYCLING LEAD FROM SPENT AUTOMOTIVE BATTERIES. THE BATTERIES WERE DRAINED OF SULFURIC ACID, CRUSHED, AND THEN PUT THROUGH THE LEAD RECOVERY PROCESS AT THE ON-SITE SMELTING FACILITY. PLASTIC AND RUBBER WASTE MATERIALS WERE BURIED IN AN ON-SITE LANDFILL.

BETWEEN 1973 AND 1980, THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NJDEP) CITED NL WITH 46 VIOLATIONS OF STATE AIR REGULATIONS AND ISSUED SEVERAL NOTICES AND MEMORANDA WITH RESPECT TO UNREGULATED DISCHARGES OF CONTAMINATED WATER FROM THE SITE. WATER POLLUTION VIOLATIONS WERE DIRECTED TOWARD THE BATTERY STORAGE AREA, THE ON-SITE LANDFILL, AND THE SEPTIC SYSTEM. NJDEP CONDUCTED AN AIR-MONITORING PROGRAM IN 1980 THAT IDENTIFIED AIRBORNE QUANTITIES OF LEAD, CADMIUM, ANTIMONY, AND FERROUS SULFATE PRODUCED BY THE SMELTING PROCESS, AT LEVELS EXCEEDING THE FACILITY'S OPERATING PERMITS.

WHEN NL OPERATED THE FACILITY, EMISSIONS FROM THE PLANT DISCOLORED OR STAINED ALUMINUM SIDING OF HOMES AND AUTOMOBILES, AND ETCHED CONCRETE. HIGH CONCENTRATIONS OF LEAD, IRON, CADMIUM, AND ANTIMONY WERE DETECTED IN AIRBORNE DUST SAMPLES COLLECTED BY NJDEP IN 1980 WHEN THE PLANT WAS OPERATIONAL.

NL CEASED SMELTING OPERATIONS IN MAY 1982. IN OCTOBER 1982, NL ENTERED INTO AN ADMINISTRATIVE CONSENT ORDER (ACO) WITH NJDEP TO CONDUCT A REMEDIAL PROGRAM TO ADDRESS CONTAMINATION OF THE SITE SOILS, PAVED AREAS, SURFACE WATER RUNOFF, LANDFILL, AND GROUNDWATER. IN DECEMBER 1982, THE SITE WAS PLACED ON THE NATIONAL PRIORITIES LIST (NPL).

IN FEBRUARY 1983, THE PLANT WAS SOLD TO NATIONAL SMELTING OF NEW JERSEY (NSNJ) AND SMELTING OPERATIONS RECOMMENCED. NSNJ ENTERED INTO AN AMENDED ACO WITH NATIONAL SMELTING AND REFINING COMPANY, INC., (NSR), NSNJ'S PARENT COMPANY, NL AND NJDEP, WHICH CLARIFIED ENVIRONMENTAL RESPONSIBILITIES OF NSNJ AND NL. NSNJ CEASED OPERATION IN JANUARY 1984, AND FILED FOR BANKRUPTCY IN MARCH 1984. IN JUNE 1984, NL VOLUNTARILY ENTERED THE SITE TO PUMP AND DISPOSE OF LEACHATE FROM THE LANDFILL.

IN 1986, NL SIGNED A CONSENT ORDER WITH EPA, WHEREBY NL ASSUMED RESPONSIBILITY FOR CONDUCTING A SITE-WIDE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) WITH EPA OVERSIGHT. VERSIONS OF THE RI REPORT WERE SUBMITTED TO EPA IN APRIL AND OCTOBER 1990, AND APRIL 1991. EPA AMENDED THE REPORT AND APPROVED IT IN JULY 1991.

AS DISCUSSED IN MORE DETAIL IN THE FOLLOWING SECTION OF THIS DOCUMENT, EPA BEGAN A REMOVAL ACTION AT THE SITE IN MARCH 1989 TO ADDRESS SITE CONDITIONS WHICH PRESENTED AN IMMINENT AND SUBSTANTIAL RISK OR THREAT TO PUBLIC HEALTH AND THE ENVIRONMENT. DUE TO THE MAGNITUDE AND COMPLEXITY OF THE SURFACE CONTAMINATION AT THE SITE AND THE CONSTRAINTS ON EPA'S REGIONAL REMOVAL PROGRAM BUDGET, EPA DECIDED TO ADDRESS THE MOST IMMINENT OR THREATENING CONDITIONS UNDER THE REMOVAL PROGRAM, AND TO CONDUCT A FOCUSED FEASIBILITY STUDY (FFS) TO ADDRESS

THE REMAINING COMPONENTS. THE FFS WHICH PROVIDES THE TECHNICAL INFORMATION WHICH SUPPORTS THIS RECORD OF DECISION, IDENTIFIED AND EVALUATED REMEDIAL ALTERNATIVES FOR AN EARLY REMEDIAL ACTION WHICH WILL CONTINUE THE SITE-STABILIZATION AND REMEDIATION EFFORTS INITIATED UNDER THE REMOVAL ACTION.

REMOVAL ACTION ACTIVITIES

EPA CONDUCTED A MULTI-PHASED REMOVAL ACTION AT THE SITE TO ADDRESS SEVERAL CONDITIONS THAT PRESENTED SERIOUS RISK TO PUBLIC HEALTH AND THE ENVIRONMENT. EPA CONDUCTED PHASE I OF THE REMOVAL ACTION IN MARCH AND APRIL 1989, WHICH CONSISTED OF CONSTRUCTION OF A CHAIN-LINK FENCE TO ENCLOSE THE FORMER SMELTING PLANT AND SPRAYING OR ENCAPSULATION OF THE ON-SITE SLAG PILES. ENCAPSULATION OF THE PILES PROVIDED TEMPORARY PROTECTION FROM WIND AND RAIN EROSION AND CONTAMINANT MIGRATION.

IN JULY AND AUGUST 1989, EPA SAMPLED PRIVATE POTABLE WELLS LOCATED ALONG US ROUTE 130, JUST NORTH OF THE SITE, WITH THE CLOSEST WELL BEING APPROXIMATELY 1000 FEET FROM THE LANDFILL. THE SAMPLES WERE ANALYZED FOR PH AND HEAVY METALS CONTAMINANTS AND INDICATED THAT THE WATER WAS WITHIN APPLICABLE DRINKING WATER STANDARDS.

AS PART OF THE RI PHASE I SAMPLING PROGRAM, AN INVENTORY OF RAW AND WASTE MATERIALS WAS CONDUCTED AT THE SITE. THE INVENTORY INDICATED THAT VARIOUS HAZARDOUS CHEMICALS, NOTABLY RED PHOSPHORUS AND METALLIC SODIUM, WERE STORED IN A LOCKED CONCRETE BUILDING ADJACENT TO THE PLANT WAREHOUSE.

IN NOVEMBER 1989, EPA BEGAN PHASE II OF THE REMOVAL ACTION. THIS PHASE CONSISTED OF ADDITIONAL ENCAPSULATION OF THE SLAG PILES, SECURING THE ENTRANCES OF THE CONTAMINATED BUILDINGS, AND REMOVAL OF OVER 40,000 POUNDS OF THE MOST TOXIC AND REACTIVE MATERIALS. THE BULK OF THESE MATERIALS WAS RECYCLED AND THE REMAINDER WAS SENT FOR DISPOSAL TO A PERMITTED LANDFILL. THESE MATERIALS INCLUDED ARSENIC, METALLIC SODIUM, RED PHOSPHORUS AND WASTE OIL.

CHAIN-LINK FENCE GATES WERE INSTALLED AT ALL ENTRANCES OF THE CONTAMINATED BUILDINGS TO DETER TRESPASSING. MOREOVER, THE LEAKY ROOF OF THE LEAD OXIDE STORAGE BUILDING WAS REPAIRED TO PREVENT RAINWATER FROM ENTERING THE BUILDING.

BERMS COMPOSED OF SAND AND STRAW WERE INSTALLED AROUND THE PERIMETERS OF THE FOUR SLAG PILES TO AID IN CONTAINING THE SLAG AND TO FILTER PARTICULATES IN ORDER TO PREVENT THEIR ENTRY INTO SURFACE RUNOFF. IN ADDITION, THE SLAG PILES WERE TREATED WITH A SECOND COATING OF THE PREVIOUSLY USED ENCAPSULANT TO HELP REDUCE FURTHER SLAG MIGRATION. IN APRIL 1990, THE CONCRETE RETAINING WALLS AROUND THE SLAG PILES WERE REENFORCED TO PREVENT COLLAPSE AND RELEASE OF SLAG TO THE ENVIRONMENT.

DURING FEBRUARY AND MARCH 1991, THE SLAG PILES, LEAD OXIDE PILE AND SURFACE WATER AT THE SITE'S FORMER SMELTING FACILITY WERE SAMPLED AS PART OF THE FOCUSED FEASIBILITY STUDY (FFS) EFFORT. THIS ADDITIONAL INFORMATION WAS TO BE USED TO HELP EVALUATE APPROPRIATE REMEDIAL MEASURES FOR TREATMENT OR DISPOSAL OF THESE CONTAMINATED MEDIA.

DURING MARCH 1991, EPA PERFORMED PHASE III OF ITS REMOVAL ACTIVITIES AT THE SITE. DURING THIS PHASE, THE DAMAGES TO THE PERIMETER FENCE WERE REPAIRED AND A NEW ENTRANCE GATE WAS INSTALLED.

APPROXIMATELY 2200 EMPTY, RUSTED AND DETERIORATED 55-GALLON STEEL DRUMS WERE REMOVED FROM THE SITE FOR INCINERATION AND STEEL RECYCLING.

ALL ON-SITE CONTAINERS, STORED IN THE OPEN, CONTAINING MATERIALS THREATENING RELEASE WERE EMPTIED OF THEIR CONTENTS AND PILED UNDER THE EXISTING COVERED AREA AT THE REAR OF THE FACILITY. BERMS OF A SAND/GRAVEL MIX WERE INSTALLED AT THE BASE OF THE PILES. THESE MEASURES WERE TAKEN TO REDUCE THE DISCHARGE OF THESE SUBSTANCES AS LEACHATE OR PARTICULATES.

FORTY-FOUR 55-GALLON OPEN HEAD DRUMS CONTAINING COPPER WIRE AND CABLE WERE REMOVED FROM THE FACILITY AND HAVE BEEN SHIPPED TO AN EPA WAREHOUSE IN EDISON, NEW JERSEY. THIS MATERIAL AND OTHER ITEMS OF VALUE HAVE BEEN THE MAIN TARGET OF TRESPASSERS INTO THE SITE. IT WAS EPA'S AIM THAT THIS ACTION WOULD REDUCE OR ELIMINATE SITE BREAK-INS, AND SUBSEQUENT EXPOSURE OF INDIVIDUALS TO HAZARDOUS MATERIALS.

CURRENT CONDITIONS

THE SITE IS PRESENTLY INACTIVE. NL MAINTAINS THE LANDFILL AREA AND ITS LEACHATE COLLECTION SYSTEM. THE LANDFILL OPERATOR AND THE NEW JERSEY STATE POLICE CONTINUE TO MONITOR THE SITE. EPA HAS POSTED SIGNS INDICATING THAT THE SITE IS HAZARDOUS AND ENTRY TO THE PROPERTY IS RESTRICTED. FIGURE 2 SHOWS THE LOCATION OF THE REMAINING ON-SITE CONTAMINANT SOURCES AND DEBRIS. TABLE 1, PROVIDES AN ESTIMATED QUANTITATIVE INVENTORY OF THESE MATERIALS.

ENFORCEMENT ACTIVITIES

INITIAL ENFORCEMENT INVESTIGATIONS IDENTIFIED THE PREVIOUS AND CURRENT SITE OWNERS AND OPERATORS AS POTENTIALLY RESPONSIBLE PARTIES (PRPS) FOR THE SITE. THESE WERE NL, NSNJ, NSR AND STANDARD METALS CORP. UNDER AN ACO, NL IS CURRENTLY PERFORMING THE SITE-WIDE RI/FS (REFERRED TO AS THE FIRST OPERABLE UNIT OR OU-1). EPA'S RECORDS INDICATE THAT NSNJ AND NSR ARE BANKRUPT, AND STANDARD METALS CORP. REFORMED AFTER BANKRUPTCY.

EPA HAS RECENTLY IDENTIFIED ADDITIONAL PRPS, PRIMARILY GENERATORS, TO WHOM GENERAL NOTICE LETTERS, ALONG WITH A DEMAND FOR PAST COSTS, WERE SENT PURSUANT TO SECTION 107 (A) OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, AS AMENDED (CERCLA). THESE PRPS ARE BELIEVED TO HAVE SENT HAZARDOUS SUBSTANCES INCLUDING, BUT NOT LIMITED TO, LEAD TO THE SITE.

#HCP

HIGHLIGHTS OF COMMUNITY PARTICIPATION

THE PROPOSED PLAN, FFS AND OTHER INFORMATION RELATED TO THE SECOND OPERABLE UNIT (OU-2) REMEDY (ADDRESSING THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND STANDING WATER AND SEDIMENTS) WERE RELEASED TO THE PUBLIC ON JULY 17, 1991. THESE DOCUMENTS WERE MADE AVAILABLE TO THE PUBLIC IN THE ADMINISTRATIVE RECORD FILE AT THE FOLLOWING LOCATIONS:

PENNS GROVE PUBLIC LIBRARY
SOUTH BROAD STREET
PENNS GROVE, NJ 08069

PEDRICKTOWN MUNICIPAL BUILDING
BOX 98 MILL STREET
PEDRICKTOWN, NJ 08067

US ENVIRONMENTAL PROTECTION AGENCY
EMERGENCY & REMEDIAL RESPONSE DIVISION
DIVISION FILE ROOM, 29TH FLOOR
26 FEDERAL PLAZA
NEW YORK, NY 10278

THE NOTICE OF AVAILABILITY OF THESE DOCUMENT WAS PUBLISHED IN THE GLOSTER COUNTY TIMES AND TODAY'S SUNBEAM ON JULY 17, 1991. A PUBLIC COMMENT PERIOD WAS HELD FROM JULY 17 TO SEPTEMBER 6, 1991. IN ADDITION, A PUBLIC MEETING WAS HELD ON AUGUST 6, 1991. AT THIS MEETING, REPRESENTATIVES FROM EPA PRESENTED AND ANSWERED QUESTIONS ON THE RESULTS OF THE SITE-WIDE RI, THE RESULTS OF THE FFS FOR OU-2, AND EPA'S PREFERRED REMEDY FOR OU-2.

RESPONSES TO ALL COMMENTS PERTAINING TO REMEDY SELECTION WHICH WERE RECEIVED BY EPA IN WRITING DURING THE PUBLIC COMMENTS PERIOD ARE INCLUDED IN THE RESPONSIVENESS SUMMARY, WHICH IS AN ATTACHMENT TO THIS DOCUMENT. THE RESPONSIVENESS SUMMARY ALSO INCLUDES EPA'S RESPONSES TO QUESTIONS AND CONCERNS REGARDING REMEDY SELECTION WHICH WERE STATED DURING THE AUGUST 6 PUBLIC MEETING.

#SROU

SCOPE AND ROLE OF OPERABLE UNIT WITHIN SITE STRATEGY

DUE TO THE SIZE AND COMPLEXITY OF THE SITE, EPA IS ADDRESSING ITS REMEDIATION IN PHASES, OR OPERABLE UNITS. THIS RECORD OF DECISION ADDRESSES THE REMEDIATION OF SEVERAL AREAS OF HAZARDOUS SURFACE CONTAMINATION WHICH EPA HAS DESIGNATED AS OPERABLE UNIT TWO (OU-2). THESE AREAS, WHICH INCLUDE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND CONTAMINATED STANDING WATER AND SEDIMENTS, WERE FOUND TO BE SIGNIFICANT AND CONTINUAL SOURCES OF CONTAMINANT MIGRATION FROM THE SITE.

IN 1989, EPA BEGAN A REMOVAL ACTION AT THE SITE WHICH ADDRESSED CONDITIONS THAT PRESENTED AN IMMINENT RISK AND/OR THREAT TO PUBLIC HEALTH AND THE ENVIRONMENT. RECOGNIZING THE MAGNITUDE OF ACTIVITIES THAT QUALIFIED FOR ACTION UNDER ITS REMOVAL AUTHORITY, EPA PRIORITIZED ITS EFFORTS TO ADDRESS THE MOST SERIOUS AND THREATENING CONDITIONS FIRST. EPA CONDUCTED A FFS TO ADDRESS THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND CONTAMINATED STANDING WATER AND SEDIMENTS ON AN EXPEDITED BASIS THAT WOULD BE CONSISTENT WITH THE LONG-TERM REMEDY FOR THE SITE. THE FFS IDENTIFIED AND EVALUATED REMEDIAL ALTERNATIVES FOR AN EARLY REMEDIAL ACTION WHICH WOULD CONTINUE THE SITE-STABILIZATION AND REMEDIATION EFFORTS WHICH WERE INITIATED UNDER THE REMOVAL ACTION ACTIVITIES.

THE EARLY REMEDIAL ACTION WILL PREVENT FURTHER RELEASES OF CONTAMINANTS FROM AREAS OF HAZARDOUS SURFACE CONTAMINATION AND CAN BE IMPLEMENTED WHILE THE SITE-WIDE RI/FS PROCEEDS.

REMOVAL ACTION ACTIVITIES

EPA CONDUCTED A MULTI-PHASED REMOVAL ACTION AT THE SITE TO ADDRESS SEVERAL CONDITIONS THAT PRESENTED A RISK TO PUBLIC HEALTH AND THE ENVIRONMENT. THE REMOVAL ACTION ACTIVITIES ARE DESCRIBED IN DETAIL UNDER THE SITE HISTORY AND ENFORCEMENT ACTIVITIES SECTION OF THIS DOCUMENT.

OPERABLE UNIT ONE

A SITE-WIDE RI/FS, WHICH EPA HAS DESIGNATED AS OPERABLE UNIT ONE (OU-1), IS CURRENTLY BEING PERFORMED FOR NL BY O'BRIEN & GERE ENGINEERS, INC. THIS RI IS A COMPREHENSIVE STUDY DESIGNED TO DETERMINE THE NATURE AND EXTENT OF CONTAMINATION ON THE SITE AND AREAS ADJACENT TO THE SITE IN VARIOUS ENVIRONMENTAL MEDIA SUCH AS AIR, SOILS, GROUNDWATER, SURFACE WATER AND STREAM SEDIMENTS. THE FS WILL IDENTIFY AND EVALUATE REMEDIAL ACTION ALTERNATIVES TO ADDRESS CONTAMINATED MEDIA SOURCES AND ELIMINATE POTENTIAL LONG-TERM HEALTH AND ENVIRONMENTAL RISKS.

OPERABLE UNIT TWO

THE BASIS FOR EXPEDITING RESPONSE ACTIONS AT THE SITE IS SUPPORTED BY THE CRITERIA FOR PERFORMING A REMOVAL ACTION.

SECTION 300.415 OF THE NATIONAL OIL AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN (NCP) DESCRIBES THE FOLLOWING FACTORS TO BE USED IN DETERMINING WHETHER A REMOVAL ACTION IS APPROPRIATE.

I ACTUAL OR POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS BY NEARBY HUMAN POPULATIONS, ANIMALS, OR THE FOOD CHAIN

II ACTUAL OR POTENTIAL CONTAMINATION OF DRINKING WATER SUPPLIES OR SENSITIVE ECOSYSTEMS

III HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS IN DRUMS, BARRELS, TANKS, OR OTHER BULK STORAGE CONTAINERS THAT MAY POSE A THREAT OF RELEASE

IV HIGH LEVELS OF HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS IN SOILS LARGELY AT OR NEAR THE SURFACE THAT MAY MIGRATE

V WEATHER CONDITIONS THAT MAY CAUSE HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS TO MIGRATE OR BE RELEASED

VI THREAT OF FIRE OR EXPLOSION

VII OTHER APPROPRIATE FEDERAL OR STATE RESPONSE MECHANISMS TO RESPOND TO THE RELEASE ARE NOT AVAILABLE

VIII OTHER SITUATIONS OR FACTORS THAT MAY POSE THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

AN ASSESSMENT OF THE CONDITIONS AT THE NL SITE WITH RESPECT TO THE CRITERIA DESCRIBED IN SECTION 300.415 OF THE NCP AND ABOVE YIELD THE FOLLOWING CONCLUSIONS:

- ! THE PRESENCE OF BULKED STORAGE PILES CONTAINING HAZARDOUS SUBSTANCES SATISFIES CRITERIA (I) AND (III).
- ! THE PRESENCE OF CONTAMINATED STANDING WATER ON SURFACES AND IN BASEMENTS THAT MAY MIGRATE OFF SITE SATISFIES CRITERIA (I), (II) AND (IV).
- ! THE PRESENCE OF DUST CONTAMINATED SURFACES AND DEBRIS SATISFIES CRITERIA (I) AND (V).
- ! THE PRESENCE OF A LEAD OXIDE PILE AND SLAG PILES SATISFIES CRITERIA (I), (IV) AND (V).
- ! THE PRESENCE OF LEAD ON THE PAVED SURFACES SATISFIES CRITERIA (IV) AND (V).

IN ADDITION, THE NEED FOR A REMOVAL ACTION IS A DIRECT RESULT OF THE UNIQUE CIRCUMSTANCES ASSOCIATED WITH THEFTS AND VANDALISM AT THE SITE, WHICH SATISFIES CRITERION (VIII).

THE RESPONSE ACTIONS TAKEN PURSUANT TO THIS RECORD OF DECISION ARE CONSISTENT WITH SECTION 104 OF CERCLA, AS AMENDED. THE EARLY REMEDIAL ACTION WILL CONTINUE THE SITE-STABILIZATION EFFORT BEGUN UNDER THE REMOVAL ACTION ACTIVITIES AND WILL BE CONSISTENT WITH THE LONG-TERM SITE-WIDE REMEDIAL ACTION.

#SSC

SUMMARY OF SITE CHARACTERISTICS

SOURCES OF CONTAMINATION

THE NL INDUSTRIES SITE WAS USED DURING THE APPROXIMATE PERIOD FROM 1972 THROUGH 1984 FOR THE PRODUCTION OF LEAD FROM USED BATTERIES AND OTHER LEAD-BEARING MATERIALS. AS A RESULT, THE SITE CONTAINS MANY POTENTIAL SOURCES OF CHEMICAL CONTAMINATION. NUMEROUS MECHANISMS FOR CHEMICAL MIGRATION, AND MANY EXPOSURE PATHWAYS FOR BOTH HUMAN AND ECOLOGICAL RECEPTORS EXIST.

THE THREE AREAS OF HAZARDOUS SURFACE CONTAMINATION AT THE SITE WHICH WERE IDENTIFIED BY EPA DURING PREVIOUS INVESTIGATIONS AND ADDRESSED WITHIN THIS OPERABLE UNIT INCLUDE, THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND STANDING WATER AND SEDIMENTS.

FOUR SEPARATE PILES CONTAIN AN ESTIMATED VOLUME OF 9800 CUBIC YARDS OF KILN SLAG FROM THE SMELTING PROCESS, WHICH ARE A SOURCE OF HEAVY METAL AND METAL OXIDES CONTAMINATION. APPROXIMATELY 200 CUBIC YARDS OF LEAD OXIDE AND SIMILAR MATERIALS, WHICH ARE ALSO SOURCES OF LEAD AND DUST EMISSIONS, ARE STORED IN ENCLOSED AREAS.

DRUMS AND DEBRIS WERE SCATTERED THROUGHOUT THE SITE, WITHIN AND OUTSIDE OF BUILDINGS AND ON THE PAVED AREAS. SOME OF THIS MATERIAL IS LEAD FEED STOCK WITH HIGH LEAD CONTENT. AS PART OF EPA'S REMOVAL ACTION ACTIVITIES, MUCH OF THE REACTIVE MATERIALS WERE REMOVED FROM THE SITE, AND CONTAMINATED DEBRIS AND DRUMS OF LEAD-BEARING MATERIAL, LOCATED THROUGHOUT THE SITE AND BUILDINGS, WERE CONSOLIDATED INTO PILES IN SEMI-PROTECTED AREAS OF THE SITE. WIPE SAMPLES INDICATED THAT EQUIPMENT SURFACES AND THE PROCESS BUILDING FLOOR AND WALLS WERE CONTAMINATED. ELEVATED LEVELS OF INORGANICS SUCH AS LEAD, CADMIUM AND NICKEL, WERE DETECTED. LEAD-BEARING MATERIALS ARE ALSO PRESENT ON CONTAMINATED SURFACES THROUGHOUT THE FACILITY, SPECIFICALLY IN PIPING, PILES, CONVEYER AND DUST COLLECTION SYSTEMS, AND THE PROCESS AND VENTILATION EQUIPMENT.

THE BUILDINGS ON THE SITE CONTAIN MANY PHYSICAL AND ENVIRONMENTAL HAZARDS, INCLUDING WATER FILLED BASEMENTS, AREAS FILLED WITH PONDED WATER, HIDDEN PITS, AND SUMPS CONTAINING CONTAMINATED LIQUIDS AND SLUDGES. CONTAMINATED WATER WAS ESTIMATED AT APPROXIMATELY ONE MILLION GALLONS. APPROXIMATELY 200 CUBIC YARDS OF SEDIMENT WERE ESTIMATED TO HAVE ACCUMULATED IN THE STANDING WATER. DRAINS ARE BLOCKED AND CONTAMINATED

LIQUID CONTINUES TO ACCUMULATE AND RUN OFF FROM THE PONDED AREAS.

CONCENTRATIONS OF CONTAMINANTS OF CONCERN, WHICH WERE DETECTED DURING SAMPLING OF THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES AND STANDING WATER, ARE LISTED IN TABLES 2, 3 AND 4.

IN ADDITION TO THE NUMEROUS CONTAMINATION SOURCES DESCRIBED ABOVE, THE CONTAMINANTS ARE BELIEVED TO HAVE MIGRATED INTO THE SOIL, GROUNDWATER, SURFACE WATERS AND SEDIMENTS, AND AIR, SINCE THE PLANT BEGAN OPERATION IN 1972. SAMPLING OF THESE MEDIA HAS BEEN UNDERTAKEN BY NL IN CONNECTION WITH THE SITE-WIDE RI/FS AND WAS NOT ADDRESSED IN THE FFS.

SUMMARY OF SITE RISKS / NATURE AND EXTENT OF THE PROBLEM

EPA CONDUCTED A QUALITATIVE RISK ASSESSMENT TO EVALUATE THE POTENTIAL RISKS TO HUMAN HEALTH AND THE ENVIRONMENT ASSOCIATED WITH THE NL SITE IN ITS CURRENT STATE. THE RISK ASSESSMENT FOCUSED ON CECRLA HAZARDOUS SUBSTANCES IN THE SLAG AND LEAD OXIDE PILES, STANDING WATER AND DUST WHICH ARE LIKELY TO POSE SIGNIFICANT RISK TO HUMAN HEALTH AND THE ENVIRONMENT.

TOXICITY INFORMATION

HIGH CONCENTRATIONS OF LEAD, CADMIUM, NICKEL AND OTHER INORGANICS HAVE BEEN DETECTED ON SITE IN THE SLAG, STANDING WATER AND DUST. LEAD IS CONSIDERED A PROBABLE HUMAN CARCINOGEN AND EXPOSURE TO LEAD IS ALSO ASSOCIATED WITH HUMAN NONCARCINOGENIC EFFECTS, INCLUDING ALTERATIONS IN THE HEMATOPOIETIC AND NERVOUS SYSTEM. CURRENTLY, HOWEVER, THERE ARE NO EPA-VERIFIED TOXICITY VALUES AVAILABLE FOR LEAD AND HENCE, THE RISKS ASSOCIATED WITH LEAD EXPOSURE CANNOT BE QUANTITATED IN A RISK ASSESSMENT. EPA THUS RELIES SOLELY ON RISK MANAGEMENT, RATHER THAN RISK ASSESSMENT, TO BASE DECISIONS ON LEAD.

EXPOSURE TO CADMIUM AND NICKEL HAS BEEN ASSOCIATED WITH NONCARCINOGENIC EFFECTS VIA INGESTION. CADMIUM IS A PROBABLE HUMAN CARCINOGEN BY INHALATION BASED ON EVIDENCE FROM HUMAN AND ANIMAL STUDIES. NICKEL DUST HAS AN A CLASSIFICATION AND IS CARCINOGENIC BY INHALATION.

CONTAMINATION EXPOSURE PATHWAYS

AN EXPOSURE PATHWAY CONSISTS OF THE FOLLOWING ELEMENTS: (1) A SOURCE AND MECHANISM OF CHEMICAL RELEASE TO THE ENVIRONMENT; (2) AN ENVIRONMENTAL TRANSPORT MEDIUM FOR THE RELEASED CHEMICAL (E.G., AIR, SURFACE RUNOFF); (3) A POINT OF POTENTIAL HUMAN CONTACT WITH THE CONTAMINATED MEDIUM (REFERRED TO AS AN EXPOSURE POINT); AND (4) A ROUTE OF EXPOSURE AT THE EXPOSURE POINT (E.G., INGESTION, INHALATION OR DERMAL CONTACT).

THE PLANT-AREA SOURCES OF CONTAMINATION HAVE PREVIOUSLY BEEN IDENTIFIED AS AIRBORNE CONTAMINATION AND SURFACE RUNOFF RESULTING FROM THE SLAG PILES, OTHER HAZARDOUS WASTE AREAS AND STANDING WATER AT THE SITE. WITH THESE CONTAMINANT SOURCES (I.E., SLAG PILES, STANDING WATER AND DUST), THERE ARE MANY POTENTIAL EXPOSURE SCENARIOS. THE FOLLOWING PARAGRAPHS ADDRESS RELEASE MECHANISM, TRANSPORT MECHANISM, POTENTIALLY EXPOSED POPULATIONS AND EXPOSURE ROUTES RELATIVE TO EACH OF THE POTENTIAL EXPOSURE MEDIA, NAMELY, SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND CONTAMINATED STANDING WATER. ONLY THE CURRENT LAND-USE EXPOSURE PATHWAYS WERE EVALUATED.

SLAG PILES AND LEAD OXIDE PILES

FOUR SLAG PILES TOTALING APPROXIMATELY 9800 CUBIC YARDS ARE STORED ON SITE IN OPEN DETERIORATING BINS, AND ON PAVED GROUND SURFACES. CONSEQUENTLY, THE POTENTIAL FOR THE CREATION OF DUST VIA WIND EROSION IS HIGH. IN ADDITION, APPROXIMATELY 200 YARDS OF LEAD OXIDE AND SIMILAR MATERIALS ARE STORED IN ENCLOSED AREAS. THE SLAG MATERIALS WERE SPRAYED WITH AN ENCAPSULANT AS A TEMPORARY MEASURE TO MITIGATE RELEASES OF HAZARDOUS CONSTITUENTS AND CONTAMINANT MIGRATION THAT WOULD OCCUR FROM WIND AND RAIN EROSION.

HIGH CONCENTRATIONS OF METALS WERE DETECTED IN THE SLAG AND LEAD OXIDE PILES. CONCENTRATIONS OF LEAD DETECTED WERE AS HIGH AS 130,000 PARTS PER MILLION (PPM) AND 480,000 PPM IN THE SLAG AND LEAD OXIDE PILES, RESPECTIVELY. THESE CONCENTRATIONS EXCEEDED THE LEAD CLEANUP RANGE OF 500 TO 1000 PPM SPECIFIED UNDER OSWER DIRECTIVE NO. 9355.4-02. IN ADDITION, THE TOXICITY CHARACTERISTIC LEACHABILITY PROCEDURE (TCLP) RESULTS

PRESENTED IN TABLE 5 INDICATE THAT THE MAJORITY OF PILES TESTED ARE HAZARDOUS BASED ON LEACHABILITY OF LEAD AND/OR CADMIUM.

BASED ON THE LEVEL OF CONTAMINATION DETECTED IN THE SLAG AND LEAD OXIDE PILES, A QUALITATIVE RISK ASSESSMENT INDICATES THAT THE POTENTIAL FOR INHALATION OF CONTAMINATED DUST IS CONSIDERED SIGNIFICANT FOR ON-SITE WORKERS AND NEARBY RECEPTORS. RUNOFF VIA RAIN EROSION IS A MECHANISM FOR POTENTIAL RELEASE OF CONTAMINANTS INTO THE ENVIRONMENT. IN ADDITION, EXPOSURE TO CONTAMINANTS VIA ACCIDENTAL INGESTION, INHALATION OR THROUGH DERMAL CONTACT IS OF POTENTIAL CONCERN FOR SITE WORKERS AND TRESPASSERS ON THE SITE.

DEBRIS AND CONTAMINATED SURFACES

THE PROCESS BUILDING WALLS, CEILING, FLOORS, STRUCTURAL MEMBERS, PIPING, AND EQUIPMENT ARE COVERED WITH DUST. THE RESULTS OF WIPE TESTS TAKEN BY EPA'S TECHNICAL ASSISTANCE TEAM (TAT) CONTRACTOR IN TABLE 2 INDICATE HIGH CONCENTRATIONS OF LEAD, IRON, CADMIUM, NICKEL, AND COPPER THROUGHOUT THE BUILDING. CONCENTRATIONS OF LEAD RANGED FROM 0.88 TO 552 MICROGRAMS/KG/QUARTER SQUARE METER. APPROXIMATELY 2500 CUBIC YARDS OF CONTAMINATED DEBRIS CONSISTING OF LEAD DROSS AND CONTAMINATED WOODEN PALLETS, BAGHOUSE BAGS, SCRAP METAL AND OTHER MATERIALS ARE PRESENT THROUGHOUT THE SITE. MUCH OF THESE MATERIALS WERE CONSOLIDATED IN TEMPORARILY PROTECTED AREAS, AS PART OF THE MOST RECENT REMOVAL ACTIVITY.

RELEASES OF CONTAMINANTS TO AIR MAY OCCUR FROM THE MIGRATION OF DUST DUE TO WIND OR ACTIVITIES AT THE SITE. THE METAL CONCENTRATIONS IN THE DUST ARE SIGNIFICANT AND MAY POSE A HEALTH RISK, IF INHALED BY ON-SITE WORKERS OR INDIVIDUALS DOWNWIND OF THE SITE. THE POTENTIAL ALSO EXISTS FOR SITE WORKERS OR TRESPASSERS AND ANIMALS TO BE EXPOSED TO CONTAMINATED DUST THROUGH DERMAL CONTACT OR INGESTION, ALTHOUGH THE POTENTIAL RISK FROM THIS PATHWAY IS EXPECTED TO BE MUCH LOWER WHEN COMPARED TO THE INHALATION PATHWAY.

STANDING WATER

IT IS SUSPECTED THAT THE DRAINS ARE BLOCKED IN AREAS WHERE STANDING WATER IS PONDED. IT WAS ESTIMATED THAT APPROXIMATELY ONE MILLION GALLONS OF CONTAMINATED STANDING WATER (I.E., ACCUMULATED RAINWATER) IS PRESENT AT THE SITE. SAMPLES OF STANDING WATER COLLECTED BY EPA'S TAT CONTRACTOR IN NOVEMBER 1989 (TABLE 2) AND MARCH 1991 (TABLE 4), WERE FOUND TO HAVE HIGH CONCENTRATIONS OF LEAD AND OTHER METALS. LEAD AND CADMIUM CONCENTRATIONS WERE DETECTED AS HIGH AS 5500 PARTS PER BILLION (PPB) AND 560 PPB, RESPECTIVELY. THE CONTAMINATION IS DUE, IN PART, TO AIRBORNE PARTICULATES, AND RAINWATER RUNOFF FROM THE SLAG AND LEAD OXIDE PILES AND OTHER WASTE MATERIALS. IN ADDITION, APPROXIMATELY 200 CUBIC YARDS OF CONTAMINATED SEDIMENTS WERE ESTIMATED TO HAVE ACCUMULATED IN THE STANDING WATER.

GIVEN SITE CONDITIONS, ACCIDENTAL INGESTION, INHALATION AND DERMAL CONTACT ARE POTENTIALLY THE MOST LIKELY ON-SITE EXPOSURE PATHWAYS. THE POTENTIAL RECEPTORS WOULD LIKELY BE SITE WORKERS AND AREA TRESPASSERS.

OFF-SITE CONTAMINANT MIGRATION IS POTENTIALLY A SIGNIFICANT EXPOSURE PATHWAY FROM THE NL SITE. DURING HEAVY RAINFALL, THE STANDING WATER EVENTUALLY OVERFLOWS THE SITE IN THE AREA OF THE WEST STREAM. CONCENTRATIONS OF LEAD IN THE STREAM WERE MEASURED AS HIGH AS 206 PPB IN SURFACE WATER SAMPLES AND 26,800 PPM IN STREAM SEDIMENT SAMPLES TAKEN IN 1990. THE LEAD CONCENTRATIONS IN THE STREAM EXCEED THE EPA RECOMMENDED SURFACE WATER CRITERION OF 1.3 PPB FOR PROTECTION OF AQUATIC LIFE DUE TO CHRONIC TOXICITY.

CONCLUSION

IN SUMMARY, THE RISK ASSESSMENT DETERMINED THAT CURRENT ON- AND OFF-SITE EXPOSURES TO CERCLA HAZARDOUS SUBSTANCES, INCLUDING LEAD, PRESENT IN THE SLAG AND LEAD OXIDE PILES, CONTAMINATED SURFACES AND DEBRIS, AND STANDING WATER AND SEDIMENTS POSE SUFFICIENT RISK TO HUMAN HEALTH AND THE ENVIRONMENT TO WARRANT THE RESPONSE ACTIONS CHOSEN IN THIS RECORD OF DECISION.

#DRA

DESCRIPTION OF REMEDIAL ALTERNATIVES

THE FEASIBILITY STUDY PROCESS INVOLVES, AS A FIRST STEP, SELECTING TECHNOLOGIES THAT ARE APPROPRIATE FOR ADDRESSING THE PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS ASSOCIATED WITH A PARTICULAR SITE.

IN THE CASE OF THE NL SITE, THE REMEDIAL OBJECTIVES FOCUS ON PREVENTING FUTURE RELEASE AND MIGRATION OF HAZARDOUS MATERIALS AND ELIMINATING THE AREAS ADDRESSED IN OU-2 AS SOURCES OF FUTURE CONTAMINATION AND EXPOSURE ON AND OFF SITE. THE REMEDIAL MEASURES EVALUATED WERE DESIGNED TO ALLEVIATE THE POTENTIAL PUBLIC HEALTH RISKS AND ENVIRONMENTAL IMPACTS ASSOCIATED WITH THREE AREAS ADDRESSED IN THE FFS, NAMELY, THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND STANDING WATER AND SEDIMENTS PRESENT AT THE NL SITE.

THE ALTERNATIVES THAT ARE PRESENTED IN THIS DOCUMENT ARE THOSE THAT PASSED THE INITIAL SCREENING AS PRESENTED IN THE EVALUATION OF ALTERNATIVES SECTION OF THE FFS REPORT. FURTHER EVALUATION OF THESE ALTERNATIVES IS PRESENTED IN THE NEXT SECTION.

CERCLA, AS AMENDED, REQUIRES EACH SELECTED SITE REMEDY TO BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COST-EFFECTIVE, AND IN ACCORDANCE WITH STATUTORY REQUIREMENTS. PERMANENT SOLUTIONS TO HAZARDOUS WASTE CONTAMINATION PROBLEMS ARE TO BE ACHIEVED WHEREVER POSSIBLE WHILE TREATING WASTES ON SITE, AND APPLYING ALTERNATIVE OR INNOVATIVE TECHNOLOGIES ARE PREFERRED.

THE FFS PRESENTS REMEDIAL ALTERNATIVES TO ADDRESS THREE AREAS OF HAZARDOUS SURFACE CONTAMINATION AT THE SITE: SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND STANDING WATER AND SEDIMENTS. A WIDE RANGE OF TECHNOLOGIES WAS CONSIDERED TO ADDRESS THE REMEDIAL OBJECTIVES FOR EACH OF THESE AREAS. THESE TECHNOLOGIES WERE SCREENED ON THE BASIS OF EFFECTIVENESS, IMPLEMENTABILITY AND COST. THOSE THAT WERE NOT ELIMINATED FROM CONSIDERATION DURING SCREENING WERE ASSEMBLED INTO THE REMEDIAL ALTERNATIVES PRESENTED BELOW. THE TERM "MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES" REFERS TO THE AMOUNT OF TIME IT WOULD TAKE TO DESIGN, CONSTRUCT AND COMPLETE THE ACTION, BUT DOES NOT INCLUDE THE TIME THAT MAY BE INVOLVED FOR NEGOTIATIONS BETWEEN EPA AND PRPS, FOR PRIVATE-PARTY FUNDING OR IMPLEMENTATION OF THE WORK. "N/A" DENOTES THAT THE "MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES" IS NOT APPLICABLE FOR THE ALTERNATIVE.

SLAG AND LEAD OXIDE PILES

ALTERNATIVE SP-1: NO ACTION

CAPITAL COST:	\$ 0
ANNUAL O&M COSTS:	\$ 25,000
PRESENT WORTH COST:	\$ 439,000
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	N/A

SUPERFUND REGULATIONS REQUIRE THAT A NO ACTION ALTERNATIVE BE EVALUATED AT EVERY SITE TO ESTABLISH A BASELINE FOR COMPARISON. THE NO ACTION ALTERNATIVE FOR THE SLAG AND LEAD OXIDE PILES WOULD INCLUDE ANNUAL SAMPLING AND ANALYSIS OF GROUNDWATER, SURFACE WATERS AND SOILS ON AND AROUND THE SITE TO MONITOR THE MIGRATION OF CONTAMINANTS. IN ADDITION, ASSESSMENTS WOULD BE PERFORMED EVERY FIVE YEARS TO DETERMINE THE NEED FOR FURTHER ACTIONS.

ALTERNATIVE SP-3: OFF-SITE FLAME REACTOR

CAPITAL COST:	\$ 4,215,100
ANNUAL O&M COSTS:	\$ 0
PRESENT WORTH COST:	\$ 4,215,100
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	18

THIS ALTERNATIVE WOULD INCLUDE REMOVING AND TREATING THE SLAG AND LEAD OXIDE OFF SITE IN A FLAME REACTOR. THIS INNOVATIVE TECHNOLOGY WOULD INVOLVE SUBJECTING THE WASTES TO VERY HOT GAS WHICH REACTS RAPIDLY TO PRODUCE A NONHAZARDOUS SLAG AND A RECYCLABLE METAL-ENRICHED OXIDE. THE VOLUME OF MATERIAL WOULD BE REDUCED 10 TO 20 PERCENT. THE SLAG COULD POSSIBLY BE RECYCLED AS FILL MATERIAL OR ROAD AGGREGATE AND THE METAL-ENRICHED OXIDE COULD BE RECYCLED BY A SECONDARY SMELTING FACILITY, ALTHOUGH AT THIS TIME, NO MARKETS HAVE BEEN IDENTIFIED FOR THESE MATERIALS.

ALTERNATIVE SP-4: ON-SITE HYDRO-METALLURGICAL LEACHING/ON-SITE DISPOSAL

CAPITAL COST:	\$ 2,980,400
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ANNUAL O&M COSTS:	\$ 17,000
PRESENT WORTH COST:	\$ 3,269,500
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	16

THIS ALTERNATIVE WOULD TREAT THE EXISTING WASTE BY A HYDRO-METALLURGICAL LEACHING PROCESS ON SITE. BENCH-SCALE TESTING WOULD BE REQUIRED TO DEFINE DESIGN CRITERIA. THE PROCESS, WHICH IS WIDELY USED IN THE METALLURGICAL INDUSTRY, SELECTIVELY DISSOLVES LEAD AND OTHER HEAVY METALS PRESENT IN THE WASTE MATERIALS. THE LEACHING STEP WOULD BE FOLLOWED BY FILTRATION, RESIDUE COLLECTION, AND PRECIPITATION. THE PRECIPITATE IS A LEAD-RICH, POTENTIALLY MARKETABLE PRODUCT. THE CAUSTIC LEACHING SOLUTION WOULD BE RECYCLED THROUGH THE PROCESS. THE RESULTING TREATED MATERIAL WOULD REQUIRE TESTING ACCORDING TO THE TCLP TO CONFIRM THAT THE MATERIAL IS NONHAZARDOUS. THERE WOULD BE NO SIGNIFICANT REDUCTION IN VOLUME OF THE MATERIAL. THE TREATED MATERIAL WOULD BE REDEPOSITED ON SITE IN ACCORDANCE WITH RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) TREATMENT STANDARDS. FOR CONSERVATIVE COST-ESTIMATING PURPOSES, IT WAS ASSUMED THAT ON-SITE PLACEMENT WOULD MEET RCRA SUBTITLE D LANDFILL REQUIREMENTS. ANY MATERIAL FROM WHICH CONTAMINANTS WOULD LEACH ABOVE ACCEPTABLE RCRA REGULATORY LEVELS, AS DETERMINED BY TCLP TESTING, WOULD BE DISPOSED OF OFF SITE AT AN APPROPRIATE RCRA-PERMITTED FACILITY. HOWEVER, IT IS EXPECTED THAT ALL OF THE MATERIAL WOULD MEET RCRA REGULATORY LEVELS AFTER TREATMENT.

ALTERNATIVE SP-5: ON-SITE SOLIDIFICATION/STABILIZATION/ON-SITE DISPOSAL

CAPITAL COST:	\$ 2,014,000
ANNUAL O&M COSTS:	\$ 17,000
PRESENT WORTH COST:	\$ 2,303,100
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	15

THIS ALTERNATIVE WOULD STABILIZE THE EXISTING WASTE ON SITE BY USING A MOBILE TREATMENT SYSTEM. THIS TECHNOLOGY IMMOBILIZES CONTAMINANTS BY BINDING THEM INTO AN INSOLUBLE MATRIX. STABILIZING AGENTS SUCH AS CEMENT, POZZOLAN, SILICATES AND/OR PROPRIETARY POLYMERS WOULD BE MIXED WITH THE FEED MATERIAL. THE EQUIPMENT IS SIMILAR TO THAT USED FOR CEMENT MIXING AND HANDLING. BENCH-SCALE TESTS WOULD BE REQUIRED TO SELECT THE PROPER QUANTITY OF STABILIZING AGENTS, FEED MATERIAL, AND WATER. IT IS POSSIBLE THAT CONTAMINATED STANDING WATER MAY BE UTILIZED IN THIS PROCESS. DEPENDING ON THE SPECIFIC TREATMENT PROCESS, THE STABILIZED VOLUME MAY INCREASE UP TO 40 PERCENT OF THE ORIGINAL VOLUME. THE STABILIZED MATERIAL WOULD REQUIRE TESTING ACCORDING TO THE TCLP TO CONFIRM THAT THE MATERIAL IS NONHAZARDOUS. DISPOSAL OF THE TREATED MATERIAL WOULD OCCUR ON SITE IN ACCORDANCE WITH RCRA TREATMENT STANDARDS. FOR CONSERVATIVE COST-ESTIMATING PURPOSES, IT WAS ASSUMED THAT ON-SITE PLACEMENT WOULD MEET RCRA SUBTITLE D LANDFILL REQUIREMENTS. ANY MATERIAL FROM WHICH CONTAMINANTS WOULD LEACH ABOVE ACCEPTABLE RCRA REGULATORY LEVELS, AS DETERMINED BY TCLP TESTING, WOULD BE DISPOSED OF OFF SITE AT AN APPROPRIATE RCRA-PERMITTED FACILITY. HOWEVER, IT IS EXPECTED THAT ALL OF THE MATERIAL WOULD MEET RCRA REGULATORY LEVELS AFTER TREATMENT.

DEBRIS AND CONTAMINATED SURFACES

ALTERNATIVE CS-1: NO ACTION

CAPITAL COST:	\$ 17,700
ANNUAL O&M COSTS:	\$ 6,800
PRESENT WORTH COST:	\$ 136,000
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	N/A

THE NO ACTION ALTERNATIVE FOR CONTAMINATED SURFACES AND DEBRIS PROVIDES A BASELINE AGAINST WHICH OTHER ALTERNATIVES MAY BE COMPARED. CONTAMINATED DEBRIS, EQUIPMENT AND SURFACES WOULD BE LEFT IN THEIR CURRENT CONDITION. ROOFS WOULD BE REPAIRED WHERE NECESSARY AND A LONG-TERM MAINTENANCE PROGRAM WOULD BE IMPLEMENTED TO ENSURE THAT THE BUILDINGS ARE NOT ACCESSIBLE. IN ADDITION, ASSESSMENTS WOULD BE PERFORMED EVERY FIVE YEARS TO DETERMINE THE NEED FOR FURTHER ACTIONS.

ALTERNATIVE CS-2: DEBRIS AND CONTAMINATED SURFACES DECONTAMINATION/OFF-SITE TREATMENT AND DISPOSAL

CAPITAL COST:	\$ 1,691,100
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ANNUAL O&M COSTS:	\$ 0
PRESENT WORTH COST:	\$ 1,691,100
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	12

THIS ALTERNATIVE WOULD INVOLVE DECONTAMINATING THE CONTAMINATED BUILDING SURFACES, DEBRIS (I.E., SCRAP METAL, PALLETS, ETC.) AND EQUIPMENT USING DUSTING, VACUUMING AND WIPING PROCEDURES. PARTS OF THE BUILDINGS AND SURFACES WHICH COULD WITHSTAND HIGH WATER PRESSURE WOULD BE CLEANED BY HYDROBLASTING. MATERIALS WOULD BE RECYCLED WHERE POSSIBLE. DEBRIS THAT COULD NOT BE DECONTAMINATED, SUCH AS CONTAMINATED BAGHOUSE BAGS, ALONG WITH COLLECTED DUST, WOULD BE TRANSPORTED TO AN APPROPRIATE OFF-SITE, RCRA-PERMITTED FACILITY. CONTAMINATED WASH WATER WOULD BE TREATED WITH THE ON-SITE STANDING WATER.

STANDING WATER AND SEDIMENTS

ALTERNATIVE SW-1: NO ACTION

CAPITAL COST:	\$ 0
ANNUAL O&M:	\$ 10,700
PRESENT WORTH COST:	\$ 220,100
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	N/A

THE NO ACTION ALTERNATIVE FOR STANDING WATER PROVIDES A BASELINE AGAINST WHICH OTHER ALTERNATIVES MAY BE COMPARED. THIS ALTERNATIVE WOULD RELY ON NATURAL ATTENUATION OF CONTAMINATED STANDING (RAIN) WATER WITHOUT ANY TREATMENT. DRAINS WOULD REMAIN PLUGGED AND CONTAMINATED. CONTAMINATED STANDING WATER WOULD BE LIKELY TO CONTINUE TO OVERFLOW THE SITE INTO THE WEST STREAM. THIS ALTERNATIVE WOULD INCLUDE ANNUAL MONITORING OF GROUNDWATER, SURFACE WATERS AND SOILS IN AND AROUND THE SITE TO TRACK CONTAMINANT MIGRATION. IN ADDITION, ASSESSMENTS WOULD BE PERFORMED EVERY FIVE YEARS TO DETERMINE THE NEED FOR FURTHER ACTIONS.

ALTERNATIVE SW-2: ON-SITE TREATMENT AND GROUNDWATER RECHARGE

CAPITAL COST:	\$ 1,335,000
ANNUAL O&M COSTS:	\$ 0
PRESENT WORTH COST:	\$ 1,335,000
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	14

THIS ALTERNATIVE WOULD CONSIST OF COLLECTING AND TREATING APPROXIMATELY ONE MILLION GALLONS OF STANDING WATER ON SITE. WASH WATER, WHICH WAS GENERATED FROM THE DECONTAMINATION OF CONTAMINATED SURFACES AND DEBRIS, WOULD ALSO BE TREATED WITH THE STANDING WATER. THE TREATMENT PROCESS WOULD CONSIST OF PRECIPITATION, CLARIFICATION, FILTRATION AND, IF NECESSARY, ION EXCHANGE OR ION REPLACEMENT. THE TREATED WATER WOULD BE RECHARGED TO THE GROUNDWATER VIA INJECTION WELLS OR INFILTRATION BASINS. SEDIMENTS AND SLUDGES GENERATED DURING THE TREATMENT PROCESS WOULD BE TREATED AND DISPOSED OF AT AN APPROPRIATE OFF-SITE, RCRA-PERMITTED FACILITY CAPABLE OF ACCEPTING THESE MATERIALS. THE TREATMENT SYSTEM WOULD BE DESIGNED TO REDUCE METAL CONCENTRATIONS TO MEET FEDERAL AND STATE DISCHARGE STANDARDS. TREATABILITY STUDIES WOULD BE REQUIRED TO DEFINE THE DESIGN AND OPERATING CRITERIA TO MEET THE REQUIRED STANDARDS FOR GROUNDWATER RECHARGE. AS PART OF THIS ALTERNATIVE, DRAINS WOULD BE UNPLUGGED AND CLEANED, WHICH IN CONJUNCTION WITH THE DECONTAMINATION OF BUILDINGS AND PAVED SURFACES, WOULD PREVENT CONTAMINATED RUNOFF FROM LEAVING THE SITE IN THE FUTURE.

ALTERNATIVE SW-3: OFF-SITE TREATMENT AND DISPOSAL

CAPITAL COST:	\$ 993,200
ANNUAL O&M COSTS:	\$ 0
PRESENT WORTH COST:	\$ 993,200
MONTHS TO ACHIEVE REMEDIAL ACTION OBJECTIVES:	6

THIS ALTERNATIVE WOULD CONSIST OF COLLECTING APPROXIMATELY ONE MILLION GALLONS OF STANDING WATER IN APPROXIMATELY 200 TANKER TRUCKS AND TRANSPORTING IT TO AN OFF-SITE, RCRA-PERMITTED TREATMENT FACILITY, WHICH WOULD BE CAPABLE OF ACCEPTING THE WATER WITH NO PRETREATMENT AT THE SITE. WASH WATER, WHICH WOULD BE GENERATED FROM THE DECONTAMINATION OF CONTAMINATED SURFACES AND DEBRIS, WOULD ALSO BE TRANSPORTED WITH THE

STANDING WATER. SEDIMENTS WOULD BE TRANSPORTED TO AN APPROPRIATE OFF-SITE, RCRA-PERMITTED FACILITY THAT WOULD BE CAPABLE OF ACCEPTING THIS MATERIAL. SAMPLES OF THE CONTAMINATED WATER AND SEDIMENTS WOULD BE SENT TO THE TREATMENT FACILITIES TO ENSURE WASTE ACCEPTANCE. AS PART OF THIS ALTERNATIVE, DRAINS WOULD BE UNPLUGGED AND CLEANED, WHICH IN CONJUNCTION WITH THE DECONTAMINATION OF BUILDINGS AND PAVED SURFACES, WOULD PREVENT CONTAMINATED RUNOFF FROM LEAVING THE SITE IN THE FUTURE.

#SCA

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

IN ACCORDANCE WITH THE NCP, A DETAILED ANALYSIS OF EACH REMEDIAL ALTERNATIVE WAS CONDUCTED WITH RESPECT TO EACH OF NINE EVALUATION CRITERIA. THIS SECTION DISCUSSES AND COMPARES THE PERFORMANCE OF THE REMEDIAL ALTERNATIVES UNDER CONSIDERATION AGAINST THESE CRITERIA. THE NINE CRITERIA ARE DESCRIBED BELOW, AND ALL SELECTED ALTERNATIVES MUST AT LEAST ATTAIN THE THRESHOLD CRITERIA. THE SELECTED ALTERNATIVE SHOULD PROVIDE THE BEST TRADE-OFFS AMONG THE PRIMARY BALANCING CRITERIA. THE MODIFYING CRITERIA WERE EVALUATED FOLLOWING THE PUBLIC COMMENT PERIOD.

THRESHOLD CRITERIA

- ! OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT: THIS CRITERION ADDRESSES WHETHER OR NOT A REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS POSED THROUGH EACH PATHWAY ARE ELIMINATED, REDUCED OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS OR INSTITUTIONAL CONTROLS.
- ! COMPLIANCE WITH ARARS: THIS CRITERION ADDRESSES WHETHER OR NOT A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) OF FEDERAL AND STATE ENVIRONMENTAL STATUTES (OTHER THAN CERCLA) AND/OR PROVIDE GROUNDS FOR INVOKING A WAIVER. THERE ARE SEVERAL TYPES OF ARARS: ACTION-SPECIFIC, CHEMICAL-SPECIFIC, AND LOCATION-SPECIFIC. ACTION-SPECIFIC ARARS ARE TECHNOLOGY OR ACTIVITY-SPECIFIC REQUIREMENTS OR LIMITATIONS RELATED TO VARIOUS ACTIVITIES. CHEMICAL- OR CONTAMINANT-SPECIFIC ARARS ARE USUALLY NUMERICAL VALUES WHICH ESTABLISH THE AMOUNT OR CONCENTRATION OF A CHEMICAL THAT MAY BE FOUND IN, OR DISCHARGED TO, THE AMBIENT ENVIRONMENT. LOCATION-SPECIFIC REQUIREMENTS ARE RESTRICTIONS PLACED ON THE CONCENTRATIONS OF HAZARDOUS SUBSTANCES OR THE CONDUCT OF ACTIVITIES SOLELY BECAUSE THEY OCCUR IN A SPECIAL LOCATION. SUMMARIES OF THE CONTAMINANT-SPECIFIC, ACTION-SPECIFIC AND LOCATION-SPECIFIC ARARS ARE PRESENTED IN TABLES 6, 7, AND 8, RESPECTIVELY. IN ADDITION, TABLE 9 CONTAINS NUMERICAL VALUES FOR CONTAMINANT-SPECIFIC ARARS RELEVANT FOR GROUNDWATER AND SURFACE WATER DISCHARGES.

PRIMARY BALANCING CRITERIA

- ! LONG-TERM EFFECTIVENESS AND PERMANENCE: THIS CRITERION REFERS TO THE MAGNITUDE OF RESIDUAL RISK AND THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME, ONCE CLEANUP GOALS HAVE BEEN MET.
- ! REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT: THIS CRITERION ADDRESSES THE DEGREE TO WHICH A REMEDY UTILIZES TREATMENT TO REDUCE THE TOXICITY, MOBILITY OR VOLUME OF CONTAMINANTS AT THE SITE.
- ! SHORT-TERM EFFECTIVENESS: THIS CRITERION REFERS TO THE TIME IN WHICH THE REMEDY ACHIEVES PROTECTION, AS WELL AS THE REMEDY'S POTENTIAL TO CREATE ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY RESULT DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD.
- ! IMPLEMENTABILITY: IMPLEMENTABILITY IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES NEEDED TO IMPLEMENT THE SELECTED ALTERNATIVE.
- ! COST: COST INCLUDES CAPITAL AND OPERATION AND MAINTENANCE (O & M) COSTS. COST

COMPARISONS ARE MADE ON THE BASIS OF THE PRESENT WORTH VALUE OF THE ENTIRE COST OF THE ALTERNATIVE.

MODIFYING CRITERIA

- ! STATE ACCEPTANCE: THIS CRITERION INDICATES WHETHER, BASED ON ITS REVIEW OF THE FFS, THE PROPOSED PLAN AND THE RECORD OF DECISION, THE STATE CONCURS WITH, OPPOSES, OR HAS NO COMMENT ON THE PREFERRED ALTERNATIVE. THIS CRITERION IS SATISFIED SINCE THE STATE CONCURS WITH THE PREFERRED ALTERNATIVE.
- ! COMMUNITY ACCEPTANCE: THIS CRITERION ADDRESSES THE PUBLIC'S GENERAL RESPONSE TO THE ALTERNATIVES DESCRIBED IN THE PROPOSED PLAN AND THE FFS REPORT. COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSES TO THESE COMMENTS ARE ADDRESSED IN THE RESPONSIVENESS SUMMARY ATTACHED TO THIS DOCUMENT.

THE COMPARISON OF REMEDIAL ALTERNATIVES USING THE NINE EVALUATION CRITERIA FOR EACH AREA OF HAZARDOUS SURFACE CONTAMINATION IS PRESENTED BELOW.

COMPARISON OF SLAG AND LEAD OXIDE PILES (SP) REMEDIAL ALTERNATIVES

THIS SUBSECTION COMPARES THE RELATIVE PERFORMANCE OF EACH SLAG AND LEAD OXIDE REMEDIAL ALTERNATIVE USING THE SPECIFIC EVALUATION CRITERIA LISTED ABOVE. A SUMMARY OF THIS COMPARATIVE ANALYSIS IS PRESENTED IN TABLE 10.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ALTERNATIVE SP-1, THE NO ACTION ALTERNATIVE, DOES NOT MEET THE REMEDIAL OBJECTIVES; THUS IT IS NOT PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. SURFACE WATER AND GROUNDWATER AND SOILS WOULD BE FURTHER CONTAMINATED DUE TO MIGRATION OF CONTAMINANTS FROM SLAG AND LEAD OXIDE PILES. ALTERNATIVE SP-3 WOULD MEET REMEDIAL OBJECTIVES BY REMOVING THE HAZARDOUS SLAG AND LEAD OXIDE MATERIALS FROM THE SITE. ALTERNATIVE SP-4 WOULD MEET REMEDIAL OBJECTIVES BY LEACHING CONTAMINANTS FROM THE SLAG AND LEAD OXIDE PILES. ALTERNATIVE SP-5 WOULD MEET REMEDIAL OBJECTIVES BY BINDING CONTAMINATION INTO A INSOLUBLE MATRIX. ALTERNATIVES SP-4 AND SP-5 WOULD PLACE THE TREATED MATERIAL ON SITE IN ACCORDANCE WITH RCRA TREATMENT STANDARDS. FOR CONSERVATIVE COST-ESTIMATING PURPOSES, IT WAS ASSUMED THAT THE ON-SITE PLACEMENT WOULD MEET RCRA SUBTITLE D REQUIREMENTS, ALTHOUGH THE ACTUAL DISPOSAL REQUIREMENTS WOULD BE DEFINED DURING THE DESIGN PHASE OF THE PROJECT, PENDING TREATABILITY STUDIES. LONG-TERM MONITORING WOULD BE REQUIRED FOR ALTERNATIVES SP-4 AND SP-5.

COMPLIANCE WITH ARARS

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS, RCRA LAND DISPOSAL RESTRICTIONS (LDR), RCRA SUBTITLE D NONHAZARDOUS WASTE MANAGEMENT STANDARDS AND RCRA IDENTIFICATION OF HAZARDOUS WASTE, WHICH DEFINES THE TCLP TO CHARACTERIZE A WASTE AS BEING HAZARDOUS, ARE ARARS WHICH APPLY TO, AND WOULD BE MET BY, ALTERNATIVES SP-3, SP-4 AND SP-5. DEPARTMENT OF TRANSPORTATION (DOT) RULES FOR HAZARDOUS MATERIALS TRANSPORT AND RCRA REQUIREMENTS FOR TRANSPORTING WASTE FOR OFF-SITE DISPOSAL WOULD APPLY AND BE MET BY ALTERNATIVE SP-3. ALTERNATIVE SP-5 WOULD COMPLY WITH 40 CFR 264, SUBPART X, WHICH PROVIDES STANDARDS THAT ARE APPLICABLE TO THE ON-SITE SOLIDIFICATION/STABILIZATION OF CONTAMINATED WASTE. A COMPLETE LISTING OF ARARS FOR THE SITE IS CONTAINED IN TABLES 6, 7, 8, AND 9.

ALTERNATIVE SP-1 WOULD FAIL TO COMPLY WITH ALL THE ASSOCIATED CONTAMINANT-SPECIFIC ARARS BUT WOULD COMPLY WITH THE ACTION-SPECIFIC ARARS.

ALL REMOVAL AND/OR TREATMENT TECHNOLOGIES PROPOSED FOR USE IN ALTERNATIVES SP-3, SP-4 AND SP-5 WOULD BE DESIGNED AND IMPLEMENTED TO SATISFY ALL CONTAMINANT-SPECIFIC, LOCATION-SPECIFIC AND ACTION-SPECIFIC ARARS. ALTERNATIVES SP-3, SP-4 AND SP-5 ARE DESIGNED TO RENDER TREATED MATERIALS NONHAZARDOUS ACCORDING TO THE TCLP. SOME UNCERTAINTY EXISTS FOR ALTERNATIVE SP-4 TO MEET ALL CONTAMINANT-SPECIFIC ARARS DUE TO THE PRESENCE OF MULTIPLE CONTAMINANTS.

LONG-TERM EFFECTIVENESS AND PERMANENCE

ALTERNATIVE SP-1 WOULD ONLY MONITOR THE MIGRATION OF THE CONTAMINANTS AND DOES NOT PROVIDE REMOVAL AND/OR TREATMENT. THEREFORE, IT IS NOT EFFECTIVE FOR THE LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

ALTERNATIVES SP-3, SP-4 AND SP-5 WOULD MITIGATE THE HAZARDS BY TOTAL REMOVAL AND/OR TREATMENT AND DISPOSAL OF SLAG AND LEAD OXIDE MATERIALS. SOME UNCERTAINTY EXISTS WITH RESPECT TO THE EFFECTIVENESS AND IMPLEMENTABILITY OF ALTERNATIVE SP-4, SINCE IT HAS NOT BEEN APPLIED TO SIMILAR CERCLA WASTE MATERIAL. ALTHOUGH SOME LONG-TERM UNCERTAINTIES REGARDING THE INTEGRITY OF THE STABILIZED MASS HAVE BEEN RAISED, ALTERNATIVE SP-5 IS HIGHLY EFFECTIVE IN TREATING INORGANIC CONTAMINATION AND WILL INHIBIT LEACHING OF CONTAMINANTS.

ALTERNATIVES SP-4 AND SP-5 WOULD PLACE TREATED MATERIALS ON SITE IN ACCORDANCE WITH RCRA TREATMENT STANDARDS. FOR COST-ESTIMATING PURPOSES, IT WAS ASSUMED THAT THE ON-SITE PLACEMENT WOULD MEET RCRA SUBTITLE D REQUIREMENTS, ALTHOUGH THE ACTUAL DISPOSAL REQUIREMENTS WOULD BE DEFINED IN DESIGN, PENDING TREATABILITY STUDIES. ALTHOUGH TREATED MATERIAL MAY BE CONSIDERED NONHAZARDOUS, IT WOULD REQUIRE LONG-TERM MONITORING. ALTERNATIVE SP-3 WOULD BE CONSIDERED A PERMANENT REMEDY AND WOULD NOT REQUIRE LONG-TERM MONITORING.

REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT

ALTERNATIVE SP-1, THE NO ACTION ALTERNATIVE, WOULD NOT PROVIDE ANY IMMEDIATE REDUCTION IN TOXICITY, MOBILITY AND VOLUME OF CONTAMINANTS. IT MAY PROVIDE SOME REDUCTION IN TOXICITY AND VOLUME BY NATURAL ATTENUATION, BUT IT WOULD BE INSIGNIFICANT. IT WOULD NOT PROVIDE ANY LONG-TERM REDUCTION IN MOBILITY OF CONTAMINANTS. ALTERNATIVES SP-3 AND SP-4 WOULD RESULT IN SIGNIFICANT REDUCTIONS IN TOXICITY, MOBILITY AND VOLUME OF CONTAMINANTS. ALTERNATIVE SP-3 WOULD REDUCE THE TOXICITY, MOBILITY AND VOLUME BY REMOVAL OF CONTAMINATED SLAG AND LEAD OXIDE MATERIALS FROM THE SITE AND OFF-SITE TREATMENT AND DISPOSAL OR RECYCLING. ALTERNATIVE SP-4 WOULD REDUCE TOXICITY, MOBILITY AND VOLUME BY ON-SITE TREATMENT. ALTERNATIVE SP-5 WOULD REDUCE THE MOBILITY AND TOXICITY OF THE CONTAMINANTS IN THAT THEY WOULD BE IMMOBILIZED IN THE STABILIZED MASS AND NO LONGER PRESENT A DIRECT CONTACT THREAT. ALTERNATIVES SP-4 AND SP-5 WOULD LEAVE SOME CONTAMINANTS ON SITE, BUT THEIR MOBILITY WOULD BE SIGNIFICANTLY REDUCED. ALTERNATIVE SP-5 WOULD RESULT IN SOME VOLUME INCREASE AFTER TREATMENT.

SHORT-TERM EFFECTIVENESS

THE IMPLEMENTATION OF ALTERNATIVE SP-1, THE NO ACTION ALTERNATIVE, SHOULD NOT RESULT IN ANY ADDITIONAL RISK TO THE WORKERS AND THE COMMUNITY. ALTERNATIVES SP-3, SP-4 AND SP-5 INCLUDE ACTIVITIES SUCH AS CONTAMINATED SLAG AND LEAD OXIDE REMOVAL, HANDLING, TREATMENT AND/OR TRANSPORTATION THAT COULD RESULT IN POTENTIAL EXPOSURE OF WORKERS AND RESIDENTS TO CONTAMINATED DUST GENERATED FROM REMEDIAL ACTIVITIES. ALTERNATIVES SP-4 AND SP-5 INVOLVE ON-SITE TREATMENT THAT REDUCES THE CHANCES OF SPILLAGE OF HAZARDOUS WASTE IN TRANSIT, BUT COULD RESULT IN WORKER EXPOSURE TO CONTAMINANTS DURING TREATMENT. HOWEVER, ALTERNATIVE SP-5 EMPLOYS A LESS COMPLEX TREATMENT PROCESS THAN ALTERNATIVE SP-4, AND DOES NOT INVOLVE THE HANDLING OF SUCH HAZARDOUS CHEMICALS. DUST CONTROL MEASURES AND CLOSED LOOP TREATMENT SYSTEMS WOULD SIGNIFICANTLY REDUCE THESE POSSIBILITIES. FOR COSTING PURPOSES, IT WAS ASSUMED THAT IT WOULD TAKE A PERIOD OF 30 YEARS FOR NATURAL ATTENUATION TO ACHIEVE PROTECTION UNDER ALTERNATIVE SP-1. IMPLEMENTATION PERIODS OF 18, 16 AND 15 MONTHS WERE ESTIMATED FOR ALTERNATIVES SP-3, SP-4 AND SP-5, RESPECTIVELY. THESE ESTIMATES INCLUDE DESIGN AND TESTING, SELECTION OF A CONTRACTOR, MOBILIZATION, DEMOBILIZATION, AND ACTUAL REMEDIATION PERIOD.

IMPLEMENTABILITY

ALTERNATIVE SP-1 DOES NOT INVOLVE ANY MAJOR SITE ACTIVITIES EXCEPT MONITORING, WHICH CAN BE EASILY IMPLEMENTED. ALTERNATIVES SP-3, SP-4 AND SP-5 INVOLVE REMOVAL AND/OR TREATMENT OF CONTAMINATED SLAG AND LEAD OXIDE MATERIALS FROM THE SITE. IMPLEMENTABILITY OF ALTERNATIVE SP-3, WHICH INVOLVES A FLAME REACTOR, IS CONSIDERED AN INNOVATIVE TECHNOLOGY AND IMPLEMENTABILITY ON A COMMERCIAL SCALE HAS NOT BEEN PROVEN, NOR HAS IT BEEN USED AT ANY SUPERFUND SITE. MARKETS HAVE NOT BEEN IDENTIFIED FOR THE PROCESS BYPRODUCTS ASSOCIATED WITH THIS ALTERNATIVE, WHICH MAY FURTHER INCREASE COSTS. REGULATORY PERMITS MUST BE APPROVED AND OBTAINED AND IMPLEMENTATION DEPENDS ON THE AVAILABILITY OF AN OPERATING FLAME REACTOR FACILITY AT THE TIME OF REMEDIATION. ALTERNATIVE SP-4 COULD BE IMPLEMENTED BECAUSE THE TECHNOLOGY IS AVAILABLE AND PROVEN IN THE HYDRO-METALLURGICAL INDUSTRY. HOWEVER, THE PROCESS HAS NOT BEEN USED FOR SIMILAR APPLICATIONS OR WASTE MATERIALS. IT MAY ALSO REQUIRE A SERIES OF STEPS TO LEACH MULTIPLE CONTAMINANTS AND WOULD ALSO PRODUCE A

SLAG AND LEAD OXIDE RESIDUE WHICH WOULD REQUIRE DISPOSAL, IN ADDITION TO LARGE AMOUNTS OF LIQUID WASTES GENERATED DURING THE PROCESS.

SOLIDIFICATION/STABILIZATION WOULD BE RELATIVELY SIMPLE TO IMPLEMENT, SINCE A ONE-STEP MIXING AND PLACEMENT PROCESS IS USED. THIS ALTERNATIVE WOULD TREAT THESE WASTES TO BE NONHAZARDOUS, WHICH WOULD BE ENSURED BY TESTING ACCORDING TO THE TCLP. THE TECHNOLOGY IS PROVEN FOR CERCLA WASTE CONTAMINATED WITH METALS. MOBILE TREATMENT UNITS ARE ALSO AVAILABLE. ANY MATERIAL FROM WHICH CONTAMINANTS WOULD LEACH ABOVE ACCEPTABLE RCRA REGULATORY LEVELS, AS DETERMINED BY TCLP TESTING, WOULD BE DISPOSED OF OFF SITE AT AN APPROPRIATE RCRA-PERMITTED FACILITY. HOWEVER, IT IS EXPECTED THAT ALL OF THE MATERIAL WOULD MEET RCRA REGULATORY LEVELS AFTER TREATMENT.

COST

THE TOTAL CAPITAL, ANNUAL OPERATION AND MAINTENANCE, AND PRESENT WORTH COSTS FOR ALL SLAG AND LEAD OXIDE MATERIAL ALTERNATIVES ARE PRESENTED IN TABLE 10. THE PRESENT WORTH COST, BASED ON A DISCOUNT RATE OF FIVE PERCENT AND A 30-YEAR OPERATION PERIOD, FOR ALTERNATIVES SP-1, SP-3, SP-4 AND SP-5 ARE \$439,000, \$4,215,100, \$3,269,000 AND \$2,303,100, RESPECTIVELY. ALTERNATIVES SP-1, SP-4 AND SP-5 WOULD REQUIRE ANNUAL OPERATION AND MAINTENANCE COSTS. ALTERNATIVE SP-3 DOES NOT REQUIRE LONG-TERM OPERATION AND MAINTENANCE. ALTERNATIVE SP-1 IS THE LEAST EXPENSIVE ALTERNATIVE. HOWEVER, ITS PRIMARY CONSTITUENT IS MONITORING AND DOES NOT INVOLVE ANY TREATMENT AND DISPOSAL. ALTERNATIVE SP-5 IS THE LEAST EXPENSIVE TREATMENT AND DISPOSAL ALTERNATIVE WHILE ALTERNATIVE SP-3 IS THE MOST EXPENSIVE.

COMPARISON OF DEBRIS AND CONTAMINATED SURFACES (CS) ALTERNATIVES THIS SUBSECTION COMPARES THE RELATIVE PERFORMANCE OF EACH DEBRIS AND CONTAMINATED SURFACES REMEDIAL ALTERNATIVE USING THE SPECIFIC EVALUATION CRITERIA LISTED PREVIOUSLY. A SUMMARY OF THIS COMPARATIVE ANALYSIS IS PRESENTED IN TABLE 11.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ALTERNATIVE CS-1, THE NO ACTION ALTERNATIVE, WOULD LEAVE DEBRIS AND SURFACES, WHICH ARE PRIMARILY CONTAMINATED WITH LEAD DUST, IN THEIR CURRENT CONDITION. THIS ALTERNATIVE WOULD NOT MEET THE REMEDIAL OBJECTIVES AND WOULD NOT ALLOW SAFE ENTRY IN THE FUTURE. HUMAN HEALTH WOULD BE PROTECTED FROM DIRECT EXPOSURE AS LONG AS THE SITE AND BUILDING SECURITY CAN BE EFFECTIVELY MAINTAINED. HOWEVER, RISK DUE TO EXPOSURE OF DOWN-WIND RECEPTORS AND ENVIRONMENTAL RISKS WOULD NOT CHANGE. IN COMPARISON, ALTERNATIVE CS-2 WOULD DECONTAMINATE DEBRIS AND REMOVE IT FROM SITE FOR DISPOSAL IN A SUBTITLE D LANDFILL. THIS ALTERNATIVE WOULD ALSO RECYCLE ANY APPROPRIATE MATERIALS. ALTERNATIVE CS-2 WOULD ALSO REMOVE CONTAMINATED DUST FROM THE BUILDINGS AND EQUIPMENT SURFACES. THEREFORE, IT WOULD BE FULLY PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. IN ADDITION, ALTERNATIVE CS-2 ACHIEVES THE REMEDIAL OBJECTIVES AND ALLOWS SAFE ENTRY INTO THE BUILDINGS.

COMPLIANCE WITH ARARS

ALTERNATIVE CS-1 WOULD NOT ACHIEVE CONTAMINANT-SPECIFIC ARARS. HOWEVER, IT WOULD COMPLY WITH ACTION-SPECIFIC AND LOCATION-SPECIFIC ARARS. ARARS WHICH APPLY TO, AND WOULD BE MET BY ALTERNATIVE CS-2 ARE OSHA STANDARDS, DOT RULES FOR HAZARDOUS MATERIALS TRANSPORT, AND RCRA REQUIREMENTS FOR TRANSPORTING WASTE FOR OFF-SITE DISPOSAL. A COMPLETE LISTING OF ARARS FOR THE SITE IS CONTAINED IN TABLES 6, 7, 8 AND 9.

LONG-TERM EFFECTIVENESS AND PERMANENCE

ALTERNATIVE CS-1 WOULD ONLY MAINTAIN THE SITE AND BUILDINGS IN THEIR PRESENT CONDITIONS. THEREFORE, DEBRIS AND CONTAMINATED DUST ON SURFACES WOULD REMAIN, ALTHOUGH ROOF REPAIRS WOULD PREVENT WATER LEAKAGE AND TRANSPORT OF CONTAMINANTS. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT WOULD RELY SOLELY ON MAINTAINING THE SITE AND BUILDING SECURITY. ALTERNATIVE CS-2 WOULD REMOVE ALL HAZARDOUS DEBRIS AND DUST FOR OFF-SITE TREATMENT AND DISPOSAL. MATERIALS WOULD BE RECYCLED WHEREVER POSSIBLE. ANY CONTAMINATED WATER GENERATED FROM DECONTAMINATION OPERATIONS WOULD BE REMOVED AND TREATED AND/OR DISPOSED OF WITH THE STANDING WATER. THIS ALTERNATIVE WOULD ELIMINATE LONG-TERM EXPOSURE RISKS FROM THE SITE AND THE BUILDINGS TO ON-SITE WORKERS AND DOWNWIND RECEPTORS. THE BUILDINGS COULD BE SAFELY ENTERED AFTER DECONTAMINATION WITHOUT PRESENTING A RISK TO HUMAN HEALTH.

REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT

ALTERNATIVE CS-1 WOULD NOT PROVIDE ANY REDUCTION IN TOXICITY OR VOLUME. MOBILITY OF CONTAMINANTS IN THE BUILDINGS WOULD BE SOMEWHAT REDUCED BY REPAIRING THE LEAKY ROOF. HOWEVER, MOBILITY OF CONTAMINANTS FROM DEBRIS STAGED OUTDOORS WOULD REMAIN UNALTERED. ALTERNATIVE CS-2 WOULD PROVIDE COMPLETE REDUCTION IN MOBILITY, TOXICITY AND VOLUME, SINCE ALL CONTAMINANTS WOULD BE REMOVED FROM THE SITE.

SHORT-TERM EFFECTIVENESS

ALTERNATIVE CS-1 WOULD NOT RESULT IN ANY ADDITIONAL RISK TO THE WORKERS, COMMUNITY OR THE ENVIRONMENT AS LONG AS BUILDING SECURITY AND INTEGRITY COULD BE MAINTAINED. ROOF REPAIR WOULD NOT INTRODUCE ADDITIONAL RISK. ALTERNATIVE CS-2 WOULD INVOLVE REMOVAL AND TRANSPORT OF CONTAMINANTS FROM THE SITE. THEREFORE, THERE WOULD BE SOME POTENTIAL PUBLIC EXPOSURE RISKS AS WELL AS ENVIRONMENTAL IMPACTS ASSOCIATED WITH POSSIBLE ACCIDENTS INVOLVING TRANSPORTATION OF WASTE MATERIALS TO APPROVED FACILITIES. WORKER EXPOSURE RISK WOULD INCREASE DURING DECONTAMINATION ACTIVITIES ASSOCIATED WITH ALTERNATIVE CS-2. THESE RISKS WOULD BE MITIGATED BY PROTECTIVE EQUIPMENT AND STRICT ADHERENCE TO THE SITE-SPECIFIC HEALTH AND SAFETY PLAN. ALTERNATIVE CS-1 WOULD REQUIRE LONG-TERM MAINTENANCE. ALTERNATIVE CS-2 WOULD BE CONSIDERED A PERMANENT REMEDY AND WOULD NOT REQUIRE ANY MAINTENANCE. ROOF REPAIR FOR ALTERNATIVE CS-1 COULD TAKE APPROXIMATELY ONE MONTH. BUILDING DECONTAMINATION COULD BE ACCOMPLISHED IN APPROXIMATELY THREE MONTHS FOR ALTERNATIVE CS-2. HOWEVER, A PERIOD OF ONE YEAR WAS ESTIMATED FOR DESIGN, BIDDING, SELECTION OF A CONTRACTOR, MOBILIZATION, DEMOBILIZATION, AND ACTUAL DECONTAMINATION TIME.

IMPLEMENTABILITY

ALTERNATIVE CS-1 COULD BE EASILY IMPLEMENTED AS IT DOES NOT INVOLVE ANY MAJOR ACTIVITIES. THIS ALTERNATIVE WOULD REQUIRE MONITORING, ROOF REPAIR, AND MAINTAINING SITE SECURITY. ALTERNATIVE CS-2 WOULD REQUIRE EXTENSIVE DECONTAMINATION. MULTIPLE TECHNOLOGIES SUCH AS DUSTING, VACUUMING, WIPING AND HYDROBLASTING WOULD BE UTILIZED DEPENDING ON THE AREA OF THE BUILDING AND SURFACES TO BE DECONTAMINATED. SOME PARTS OF THE BUILDINGS, SUCH AS WALKWAYS AND STAIRS, ARE STRUCTURALLY WEAK AND WOULD REQUIRE PROPER ASSESSMENT BEFORE USING HIGH PRESSURE WASHING TECHNIQUES SUCH AS HYDROBLASTING. ALTHOUGH SOME OF THE AREAS, SUCH AS THE KILN BURNER BUILDING, FEED BUILDING AND DECASING BUILDING, HAVE WALLS AND ROOFS CONTAINING ASBESTOS, IT IS NOT IN A FRIABLE STATE. FRIABLE ASBESTOS WAS REMOVED DURING THE REMOVAL ACTION ACTIVITIES, AND PROPER CARE WOULD BE TAKEN DURING THE BUILDINGS' DECONTAMINATION TO ENSURE THAT FRIABLE ASBESTOS WOULD NOT BE EXPOSED DURING THESE ACTIVITIES. AREAS CONTAINING ASBESTOS WOULD NOT BE SUBJECTED TO HYDROBLASTING. ALL TECHNOLOGIES ASSOCIATED WITH ALTERNATIVE CS-2 ARE COMMERCIALY AVAILABLE AND COMMONLY USED FOR CLEANING AND DECONTAMINATION APPLICATIONS. COLLECTED DUST, AND WIPE CLOTHS USED FOR DECONTAMINATION, COULD BE TREATED AND DISPOSED OF AT AN APPROPRIATE RCRA PERMITTED FACILITY, WHILE DECONTAMINATED DEBRIS WOULD BE EITHER RECYCLED OR DISPOSED OF APPROPRIATELY.

COST

THE TOTAL CAPITAL, ANNUAL OPERATION AND MAINTENANCE, AND PRESENT WORTH COSTS FOR BOTH ALTERNATIVES ARE PRESENTED IN TABLE 11. THE PRESENT WORTH COST OF \$136,000 FOR ALTERNATIVE CS-1 IS BASED ON A FIVE PERCENT DISCOUNT RATE AND 30-YEAR PERIOD AND IS PRIMARILY ASSOCIATED WITH MAINTENANCE COSTS. ALTERNATIVE CS-2, WHICH HAS AN ESTIMATED PRESENT WORTH COST OF \$1,691,000, WOULD NOT INCUR ANNUAL OPERATION AND MAINTENANCE COST. ALTHOUGH ALTERNATIVE CS-1 IS LESS EXPENSIVE THAN ALTERNATIVE CS-2, IT WOULD NOT INVOLVE ANY TREATMENT OR BE AS PROTECTIVE AS ALTERNATIVE CS-2.

COMPARISON OF STANDING WATER AND SEDIMENT (SW) REMEDIAL ALTERNATIVES

THIS SUBSECTION COMPARES THE RELATIVE PERFORMANCE OF EACH STANDING WATER AND SEDIMENT REMEDIAL ALTERNATIVE USING THE SPECIFIC EVALUATION CRITERIA LISTED ABOVE. A SUMMARY OF THIS COMPARATIVE ANALYSIS IS PRESENTED IN TABLE 12.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ALTERNATIVE SW-1, THE NO ACTION ALTERNATIVE, WOULD NOT PROVIDE PROTECTION OF HUMAN HEALTH AND THE

ENVIRONMENT. CONTAMINATED STANDING WATER AND SEDIMENTS ON THE SITE WOULD CONTINUE TO CONTAMINATE SURFACE WATER AND GROUNDWATER. ALTERNATIVES SW-2 AND SW-3 WOULD BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND ACHIEVE THE REMEDIAL OBJECTIVES BECAUSE CONTAMINATED WATER AND SEDIMENTS WOULD BE REMOVED FROM THE SITE AND TREATED AND/OR DISPOSED. THESE ALTERNATIVES WOULD RESULT IN THE REDUCTION OF TOXICITY, MOBILITY AND VOLUME OF CONTAMINANTS. ALTERNATIVE SW-2 WOULD INVOLVE ON-SITE TREATMENT AND DISPOSAL, AND TREATED WATER WOULD MEET GROUNDWATER DISCHARGE REQUIREMENTS. SECONDARY WASTES GENERATED FROM TREATMENT ALONG WITH SEDIMENTS REMOVED FROM THE SITE WOULD BE DISPOSED OF OFF SITE AT AN APPROPRIATE RCRA-PERMITTED FACILITY. ALTERNATIVE SW-3 WOULD REMOVE CONTAMINATED SURFACE WATER AND SEDIMENTS FOR DISPOSAL AT AN OFF-SITE, RCRA-PERMITTED FACILITY.

COMPLIANCE WITH ARARS

ALTERNATIVE SW-1 WOULD NOT COMPLY WITH CONTAMINANT-SPECIFIC ARARS. IT WOULD, HOWEVER, COMPLY WITH ASSOCIATED ACTION-SPECIFIC AND LOCATION-SPECIFIC ARARS. A COMPLETE LIST OF ARARS FOR THE SITE MAY BE FOUND IN TABLES 6, 7, 8 AND 9.

OSHA STANDARDS ARE ARARS THAT WOULD BE MET BY BOTH ALTERNATIVES SW-2 AND SW-3. ALL FEDERAL AND STATE STANDARDS APPLICABLE FOR RECHARGE OF TREATED WASTEWATER TO GROUNDWATER, INCLUDING MAXIMUM CONCENTRATION LEVELS (MCLS), WOULD APPLY AND BE MET BY ALTERNATIVE SW-2. ALTERNATIVE SW-3, WHICH INVOLVES OFF-SITE TREATMENT AND DISPOSAL, WOULD MEET DOT RULES FOR HAZARDOUS MATERIALS TRANSPORT AND RCRA REQUIREMENTS FOR TRANSPORTING WASTE FOR OFF-SITE DISPOSAL. THE SHIPMENT OF CONTAMINATED WATER CONTAINING HAZARDOUS CONSTITUENTS TO AN OFF-SITE TREATMENT AND DISPOSAL FACILITY WOULD BE CONSISTENT WITH EPA'S POLICY TO ENSURE THAT THE FACILITY IS AUTHORIZED TO ACCEPT SUCH MATERIAL IN COMPLIANCE WITH RCRA OPERATING STANDARDS.

ALTERNATIVE SW-2 WOULD BE DESIGNED TO ACHIEVE CONTAMINANT-SPECIFIC ARARS FOR GROUNDWATER RECHARGE. ALTERNATIVES SW-2 AND SW-3 WOULD MEET CONTAMINANT-SPECIFIC, ACTION-SPECIFIC AND LOCATION-SPECIFIC ARARS.

LONG-TERM EFFECTIVENESS AND PERMANENCE

ALTERNATIVE SW-1 WOULD NOT PROVIDE REMOVAL OR TREATMENT BUT WOULD PROVIDE SITE ACCESS RESTRICTIONS. HOWEVER, THIS WOULD NOT BE EFFECTIVE IN THE LONG TERM IN PREVENTING FURTHER CONTAMINATION OF SURFACE WATER AND GROUNDWATER.

ALTERNATIVES SW-2 AND SW-3 WOULD BE EFFECTIVE IN ELIMINATING POTENTIAL RISKS ASSOCIATED WITH ON-SITE EXPOSURE THROUGH DIRECT CONTACT AND INGESTION OF CONTAMINATED STANDING WATER AND SEDIMENTS. THIS ALTERNATIVE WOULD ALSO PREVENT FURTHER CONTAMINATION OF SURFACE WATER AND GROUNDWATER AND OFF-SITE CONTAMINANT MIGRATION. BOTH ALTERNATIVES WOULD BE PERMANENT AND EFFECTIVE IN PROTECTING THE HUMAN HEALTH AND THE ENVIRONMENT.

REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT

ALTERNATIVE SW-1, THE NO ACTION ALTERNATIVE, WOULD NOT INVOLVE ANY REMOVAL, TREATMENT OR DISPOSAL OF THE CONTAMINATED STANDING WATER AND SEDIMENTS AND, THEREFORE, WOULD NOT BE EFFECTIVE IN REDUCING THE TOXICITY, MOBILITY OR VOLUME OF THE CONTAMINATION.

ALTERNATIVES SW-2 AND SW-3 WOULD EFFECTIVELY REDUCE THE TOXICITY, MOBILITY AND VOLUME OF THE CONTAMINATION BECAUSE THESE ALTERNATIVES WOULD COMPLETELY REMOVE CONTAMINATED STANDING WATER PONDED THROUGHOUT THE SITE AND IN THE BASEMENT OF THE REFINING BUILDING. THESE ALTERNATIVES WOULD ALSO INCLUDE DISPOSAL OF SEDIMENTS UNDERLYING THE STANDING WATER IN AN APPROPRIATE, RCRA-PERMITTED FACILITY.

SHORT-TERM EFFECTIVENESS

THE IMPLEMENTATION OF ALTERNATIVE SW-1 WOULD NOT RESULT IN ADDITIONAL RISK TO THE WORKERS AND THE COMMUNITY, SINCE NO MAJOR REMEDIAL ACTIVITIES WOULD BE CONDUCTED. ALTERNATIVES SW-2 AND SW-3 INVOLVE COLLECTION, TREATMENT, AND/OR DISPOSAL OF CONTAMINATED STANDING WATER AND SEDIMENTS. ALTERNATIVE SW-2 WOULD INVOLVE ON-SITE TREATMENT AND DISPOSAL AND REQUIRE HANDLING OF CHEMICALS AND PROCESS BYPRODUCTS, SUCH AS CONTAMINATED SLUDGES, WHICH WOULD REQUIRE APPROPRIATE DISPOSAL. THE ACTIVITIES ASSOCIATED WITH ALTERNATIVES SW-2 AND SW-3 WOULD INVOLVE SHORT-TERM RISK TO SITE WORKERS. HOWEVER, THESE RISKS COULD BE MINIMIZED THROUGH IMPLEMENTATION

OF THE SITE-SPECIFIC HEALTH AND SAFETY PLAN.

OFF-SITE DISPOSAL OF SECONDARY WASTES GENERATED DURING TREATMENT AND SEDIMENTS IN ALTERNATIVE SW-2 AND TRANSPORTATION OF CONTAMINATED WATER AND SEDIMENTS IN ALTERNATIVE SW-3 WOULD POSE A POTENTIAL RISK TO THE COMMUNITY FROM POSSIBLE SPILLAGE DURING TRANSIT. COORDINATION WITH LOCAL TRAFFIC AUTHORITIES WOULD BE REQUIRED FOR THESE ALTERNATIVES. ALTERNATIVE SW-1 COULD TAKE MORE THAN 30 YEARS TO ACHIEVE PROTECTION THROUGH NATURAL ATTENUATION OF CONTAMINATED WATER. HOWEVER, A PERIOD OF 30 YEARS WAS USED FOR COST-ESTIMATING PURPOSES. A PERIOD OF FOURTEEN MONTHS WAS ESTIMATED FOR ALTERNATIVE SW-2. THIS ESTIMATE INCLUDES DESIGN AND TESTING, BIDDING, CONTRACTOR SELECTION, MOBILIZATION, DEMOBILIZATION, AND ACTUAL REMEDIATION TIME. ALTERNATIVE SW-3 WOULD REQUIRE SIX MONTHS TO ACHIEVE COMPLETE PROTECTION.

IMPLEMENTABILITY

ALL COMPONENTS OF ALTERNATIVE SW-1 WOULD BE EASILY IMPLEMENTED. THIS ALTERNATIVE SIMPLY REQUIRES ACCESS RESTRICTIONS AND A MONITORING PROGRAM. ALTERNATIVE SW-2 WOULD UTILIZE RELATIVELY COMMON TREATMENT TECHNOLOGIES AND MATERIALS AND IS AVAILABLE FROM A NUMBER OF VENDORS. HOWEVER, IT WOULD REQUIRE TIME TO CONDUCT A TREATABILITY STUDY TO DEFINE THE DESIGN AND OPERATING PARAMETERS OF THE TREATMENT PROCESS, AND DESIGN AND SET UP AN ON-SITE TREATMENT FACILITY TO MEET THE STRINGENT TREATMENT LEVELS REQUIRED FOR GROUNDWATER RECHARGE. ALTERNATIVE SW-3 UTILIZES OFF-SITE TREATMENT AND DISPOSAL AND WOULD REQUIRE LESS TIME AND MONEY TO IMPLEMENT COMPARED TO ALTERNATIVE SW-2. THERE ARE ONLY A FEW OFF-SITE TREATMENT AND DISPOSAL FACILITIES AVAILABLE FOR AQUEOUS WASTE TREATMENT, BUT INQUIRIES MADE BY EPA INDICATE THAT ADEQUATE TREATMENT AND DISPOSAL CAPACITY WOULD BE AVAILABLE.

COST

THE TOTAL CAPITAL, ANNUAL OPERATION AND MAINTENANCE AND PRESENT WORTH COSTS FOR ALL STANDING WATER AND SEDIMENT REMEDIAL ALTERNATIVES ARE PRESENTED IN TABLE 12. THE PRESENT WORTH COSTS, BASED ON A DISCOUNT RATE OF FIVE PERCENT AND A 30-YEAR PERIOD, FOR ALTERNATIVES SW-1, SW-2 AND SW-3 ARE \$220,000, \$1,335,000 AND \$993,200, RESPECTIVELY. ONLY ALTERNATIVE SW-1 WOULD REQUIRE AN ANNUAL OPERATION AND MAINTENANCE COST. ALTERNATIVES SW-2 AND SW-3 WOULD NOT INVOLVE OPERATION AND MAINTENANCE COSTS. ALTERNATIVE SW-1 WOULD BE THE LEAST EXPENSIVE, BUT IT WOULD NOT INVOLVE ANY TREATMENT. ALTERNATIVE SW-2 WOULD BE THE MOST EXPENSIVE STANDING WATER REMEDIAL ALTERNATIVE. ALTERNATIVE SW-3 WOULD BE A LESS EXPENSIVE ALTERNATIVE INVOLVING TREATMENT AND DISPOSAL.

#SR

THE SELECTED REMEDY

THE EVALUATION OF THE ALTERNATIVES IN THE PREVIOUS SECTION DISCUSSED EACH OF THE ALTERNATIVES RELATIVE TO CRITERIA ESTABLISHED UNDER THE SUPERFUND LAW AND REGULATIONS. THE INTENT OF THE EARLY REMEDIAL ACTION IS TO REMEDIATE THOSE AREAS OF THE SITE THAT REQUIRE AN EXPEDITED RESPONSE, AND TO IMPLEMENT REMEDIAL ACTIVITIES THAT WILL BE CONSISTENT WITH THE FINAL REMEDY AT THE SITE.

BASED ON THE RESULTS OF THE FFS, AND AFTER CAREFUL CONSIDERATION OF ALL REASONABLE ALTERNATIVES, EPA AND THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY (NJDEPE) PROPOSED UTILIZING THE FOLLOWING ALTERNATIVES FOR THE EARLY REMEDIAL ACTION AT THE NL SITE AT THE PUBLIC MEETING HELD ON AUGUST 6, 1991:

SP-5: SOLIDIFICATION/STABILIZATION/ON-SITE DISPOSAL OF THE SLAG AND LEAD OXIDE PILES

CS-2: DECONTAMINATION/OFF-SITE TREATMENT AND DISPOSAL OF THE CONTAMINATED SURFACES AND DEBRIS

SW-3: OFF-SITE TREATMENT AND DISPOSAL OF THE STANDING WATER AND SEDIMENTS

AFTER CONSIDERING PUBLIC COMMENTS, THE SELECTED ALTERNATIVES ARE THE IMPLEMENTATION OF ALTERNATIVES SP-5, CS-2 AND SW-3. SITE RISKS HAVE BEEN IDENTIFIED AS BEING PRIMARILY DUE TO EXPOSURE TO CONTAMINATED MEDIA AND RELEASES TO THE ENVIRONMENT FROM THE CONTAMINATED MEDIA. THESE RISKS WOULD BE ELIMINATED THROUGH IMPLEMENTATION OF THE SELECTED REMEDY.

THE SELECTED ALTERNATIVES REPRESENT THE BEST BALANCE OF TRADE-OFFS AMONG THE CRITERIA USED TO EVALUATE REMEDIAL ACTIONS. THE SELECTED ALTERNATIVES MEET THE STATUTORY REQUIREMENTS IN CERCLA SECTION 121(B): 1) TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT; 2) TO COMPLY WITH ARARS; AND 3) TO BE COST-EFFECTIVE. THE SELECTED ALTERNATIVES UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE AND SATISFY THE STATUTORY PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT.

EPA AND NJDEPE BELIEVE THAT THE SELECTED REMEDY WILL REDUCE THE THREAT TO PUBLIC HEALTH AND THE ENVIRONMENT THROUGH THE FOLLOWING SEQUENCE OF ACTIONS. FIRST, THE SLAG AND LEAD OXIDE PILES, IN ADDITION TO SIMILAR MATERIALS, WOULD BE TREATED USING THE SOLIDIFICATION/ STABILIZATION TECHNOLOGY. CONCURRENTLY, BUILDINGS, PAVED SURFACES, EQUIPMENT AND DEBRIS WOULD BE DECONTAMINATED. SUBSEQUENTLY, THE CONTAMINATED STANDING WATER AND WATER USED FOR DECONTAMINATION OF BUILDINGS, ETC., WOULD BE COLLECTED AND TRANSPORTED FOR OFF-SITE TREATMENT AND DISPOSAL. FINALLY, DRAINS WOULD BE DECONTAMINATED AND UNPLUGGED. THROUGH THIS SEQUENCE, THE SOURCES OF CONTAMINATED RUNOFF WOULD BE ELIMINATED AND WATER FROM FUTURE RAIN EVENTS WOULD DRAIN THROUGH THESE AREAS WITHOUT TRANSPORTING CONTAMINATION OFF SITE.

IN ADDITION, MATERIALS FOR WHICH MARKETS CAN BE FOUND WILL BE RECYCLED. RECYCLING WILL ALLOW RECOVERY OF CONTAMINANT RESOURCES IN THE WASTE MATERIALS AND WILL RESULT IN PERMANENT REMOVAL OF THESE MATERIALS FROM THE SITE. MATERIALS WILL BE RECYCLED, PROVIDING THAT IT CAN BE DONE IN A MANNER THAT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, IS COST-EFFECTIVE AND CAN BE ACCOMPLISHED IN APPROXIMATELY THE SAME TIME FRAME AS THE ALTERNATIVES IDENTIFIED IN THE SELECTED REMEDY.

THE TOTAL PRESENT WORTH COST OF THE SELECTED REMEDY IS ESTIMATED TO BE \$4,987,000 WHICH INCLUDES TREATMENT AND ON-SITE DISPOSAL OF THE SLAG AND LEAD OXIDE MATERIALS, DECONTAMINATION OF DEBRIS AND CONTAMINATED SURFACES WITH OFF-SITE TREATMENT AND DISPOSAL, AND OFF-SITE TREATMENT AND DISPOSAL OF CONTAMINATED STANDING WATER AND SEDIMENTS. ALL OFF-SITE DISPOSAL WILL BE AT APPROPRIATE FACILITIES. THE CAPITAL COST IS ESTIMATED TO BE \$4,698,300. ANNUAL OPERATION AND MAINTENANCE COSTS ARE ESTIMATED TO BE \$17,000.

THE ACTUAL COST MAY VARY DUE TO A NUMBER OF FACTORS INCLUDING THE UNCERTAINTY IN THE PRECISE AMOUNT OF MATERIAL THAT IS AMENABLE TO THE SOLIDIFICATION/STABILIZATION TECHNOLOGY, THE INCREASE IN VOLUME AFTER SOLIDIFICATION/STABILIZATION, AND THE EXACT AMOUNT OF STANDING WATER AND SEDIMENTS PRESENT WHICH WILL REQUIRE OFF-SITE TRANSPORTATION AND DISPOSAL.

#SD

STATUTORY DETERMINATIONS

UNDER ITS LEGAL AUTHORITIES, EPA'S PRIMARY RESPONSIBILITY AT SUPERFUND SITES IS TO UNDERTAKE REMEDIAL ACTIONS THAT ACHIEVE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. IN ADDITION, SECTION 121 OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT, AS AMENDED, ESTABLISHES SEVERAL OTHER STATUTORY REQUIREMENTS AND PREFERENCES. THESE SPECIFY THAT, WHEN COMPLETE, THE SELECTED REMEDIAL ACTION FOR A SITE MUST COMPLY WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL STANDARDS ESTABLISHED FOR FEDERAL AND STATE ENVIRONMENTAL LAWS UNLESS A STATUTORY WAIVER IS JUSTIFIED. THE SELECTED REMEDY MUST ALSO BE COST-EFFECTIVE AND UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. FINALLY, THE STATUTE INCLUDES A PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT PERMANENTLY AND SIGNIFICANTLY REDUCE THE TOXICITY, MOBILITY OR VOLUME OF HAZARDOUS SUBSTANCES AS THEIR PRINCIPAL ELEMENT. THE FOLLOWING SECTIONS DISCUSS HOW THE SELECTED REMEDY MEETS THESE STATUTORY REQUIREMENTS.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE THREE COMPONENTS OF THE SELECTED REMEDY PROVIDE FOR PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT BY REMOVING THE IMMEDIATE AND FUTURE RISKS POSED BY THESE HAZARDOUS MATERIALS ON SITE. CONTAMINATED SLAG AND LEAD OXIDE MATERIALS WILL BE TREATED ON SITE USING SOLIDIFICATION/STABILIZATION PROCESSES. THE TREATED MATERIALS WILL THEN BE PLACED ON SITE IN A PROTECTIVE MANNER PURSUANT TO RCRA STANDARDS. CONTAMINATED DEBRIS AND SURFACES WILL BE DECONTAMINATED. DEBRIS THAT COULD NOT BE DECONTAMINATED WILL BE TRANSPORTED TO AN APPROPRIATE OFF-SITE, RCRA-PERMITTED FACILITY. ANY RECYCLABLE MATERIALS FOR WHICH MARKETS CAN BE FOUND WILL BE RECYCLED. CONTAMINATED STANDING WATER AND SEDIMENTS WILL BE TRANSPORTED OFF SITE FOR TREATMENT AND DISPOSAL. THE SELECTED REMEDY WILL SIGNIFICANTLY REDUCE THE MOBILITY AND AVAILABLE TOXICITY OF CONTAMINANTS

AND WILL DIRECTLY RESULT IN THE REDUCTION OF RISKS POSED BY THE PRESENCE OF CONTAMINANTS AT THE SITE. THERE WILL BE NO UNACCEPTABLE SHORT-TERM RISKS CAUSED BY IMPLEMENTATION OF THIS REMEDY.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THE THREE COMPONENTS OF THE SELECTED REMEDY, SP-5, CS-2 AND SW-3, WILL COMPLY WITH ALL FEDERAL AND STATE REQUIREMENTS WHICH ARE APPLICABLE OR RELEVANT AND APPROPRIATE TO ITS IMPLEMENTATION.

ALTERNATIVE SP-5 WOULD BE IMPLEMENTED TO CONFORM WITH ALL OSHA STANDARDS, RCRA LAND DISPOSAL RESTRICTIONS (LDRS), RCRA WASTE MANAGEMENT STANDARDS, PROCEDURES FOR RCRA IDENTIFICATION OF HAZARDOUS WASTE, AND 40 CFR 264, SUBPART X, WHICH PROVIDES STANDARDS THAT ARE APPLICABLE TO THE ON-SITE SOLIDIFICATION/ STABILIZATION OF CONTAMINATED WASTE.

ARARS WHICH APPLY TO, AND WOULD BE MET BY ALTERNATIVES CS-2 AND SW-3, ARE OSHA STANDARDS, DOT RULES FOR HAZARDOUS MATERIALS TRANSPORT, AND RCRA REQUIREMENTS FOR TRANSPORTING WASTE FOR OFF-SITE DISPOSAL.

COST-EFFECTIVENESS

AFTER EVALUATING ALL OF THE ALTERNATIVES WHICH MOST EFFECTIVELY ADDRESS THE PRINCIPAL THREATS POSED BY THE CONTAMINATION AT THE SITE AND THE STATUTORY PREFERENCE FOR TREATMENT, EPA HAS CONCLUDED THAT THE THREE COMPONENTS OF THE SELECTED REMEDY AFFORD THE HIGHEST LEVEL OF OVERALL EFFECTIVENESS PROPORTIONAL TO THEIR COST. THE SELECTED REMEDIAL ACTION COMPONENTS ARE COST-EFFECTIVE BECAUSE THEY PROVIDE THE HIGHEST DEGREE OF PROTECTIVENESS FOR HUMAN HEALTH AND THE ENVIRONMENT IN THE BOTH THE LONG TERM AND SHORT TERM, COMPARED TO THE ALTERNATIVES EVALUATED, WHILE REPRESENTING A REASONABLE VALUE FOR THE COST.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE THE THREE COMPONENTS OF THE SELECTED REMEDY PROVIDE THE BEST BALANCE AMONG THE ALTERNATIVES WITH RESPECT TO THE EVALUATION CRITERIA. IN PARTICULAR, THE SELECTED REMEDY IS ABLE TO MAINTAIN PERMANENT PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER THE LONG TERM, ONCE THE REMEDY IS COMPLETED. THIS REMEDY WILL REDUCE THE MOBILITY AND AVAILABLE TOXICITY OF THE CONTAMINANTS WITHOUT ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD.

IN ADDITION, MATERIALS FOR WHICH MARKETS CAN BE FOUND WILL BE RECYCLED. THESE MATERIALS MAY INCLUDE, BUT WOULD NOT BE LIMITED TO, LEAD FEEDSTOCK MATERIALS, SCRAP METAL AND EQUIPMENT. RECYCLING WILL ALLOW RECOVERY OF CONTAMINANT RESOURCES IN THE WASTE MATERIALS AND WILL RESULT IN PERMANENT REMOVAL OF THESE MATERIALS FROM THE SITE.

SERVICES AND MATERIALS NEEDED FOR THE IMPLEMENTATION OF THE SELECTED ALTERNATIVE ARE READILY AVAILABLE AND NO TECHNICAL OR ADMINISTRATIVE DIFFICULTIES ARE FORESEEN WITH THE IMPLEMENTATION OF THE REMEDY.

THE STATE AND COMMUNITY CONCUR WITH THE REMEDY, WHICH MEETS THE STATUTORY REQUIREMENTS TO UTILIZE PERMANENT SOLUTIONS AND TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE STATUTORY PREFERENCE FOR TREATMENT IS SATISFIED BY THE SELECTED REMEDY, SINCE PRINCIPAL THREATS POSED BY THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND STANDING WATER AND SEDIMENTS WILL BE ADDRESSED THROUGH TREATMENT AND DISPOSAL OF THESE CONTAMINATED MATERIALS. THESE TREATMENT METHODS EFFECTIVELY REDUCE THE MOBILITY AND TOXICITY OF CONTAMINANTS.

DOCUMENTATION OF SIGNIFICANT CHANGES

THE PROPOSED PLAN FOR THE NL SITE WAS RELEASED TO THE PUBLIC IN JULY 1991. THE PROPOSED PLAN IDENTIFIED THE PREFERRED ALTERNATIVE FOR ADDRESSING THE SLAG AND LEAD OXIDE PILES, DEBRIS AND CONTAMINATED SURFACES, AND CONTAMINATED STANDING WATER AND SEDIMENTS. EPA REVIEWED ALL WRITTEN AND VERBAL COMMENTS SUBMITTED DURING THE PUBLIC COMMENT PERIOD. UPON REVIEW OF THESE COMMENTS, IT WAS DETERMINED THAT NO SIGNIFICANT CHANGES TO THE SELECTED REMEDY, AS ORIGINALLY IDENTIFIED IN THE PROPOSED PLAN, WERE NECESSARY.

EPA HAS RECEIVED A NUMBER OF COMMENTS RELATIVE TO THE RECYCLING OF WASTE MATERIALS. AS INDICATED IN THIS

DOCUMENT AND DISCUSSED IN THE ATTACHED RESPONSIVENESS SUMMARY, RECYCLING WILL ALLOW RECOVERY OF RESOURCES IN THE WASTE MATERIALS AND WILL RESULT IN THE PERMANENT REMOVAL OF THESE MATERIALS FROM THE SITE. CONSEQUENTLY, EPA INTENDS TO PURSUE RECYCLING OF SUCH MATERIALS AND/OR WOULD ALLOW PRPS TO DO SO, IF IT COULD BE IMPLEMENTED IN A MANNER THAT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND WITHIN A TIME FRAME COMPARABLE TO THE SELECTED REMEDY.

#TA

TABLE 1

NATIONAL LEAD
RELOCATED WASTE INVENTORY

SAMPLES	MATERIAL	ESTIMATED VOLUME
1	LITHARGE	31 DRUMS
2	BAGHOUSE SOCKS	120 DRUMS
2A	BAGHOUSE SOCKS	160 CY
3	PAPER BAGS	50 CY
4	FIBER DRUM PARTS	200
5	BATTERY CASING & DEBRIS	250 CY
6	LEAD BEARING SLAG	4 CY
7	SLAG & DEBRIS	170 CY
8	WHITE POWDER (LEAD SULFATE)	110 CY
9	LEAD HARD HEAD MATERIAL	40 CY
10	LEAD DEBRIS	400 CY
11	RED DROSS	40 CY
12	SOFT LEAD DROSS	105 CY
13	BLACK DROSS	10 CY
14	ORANGE/YELLOW DROSS	4 CY
15	EMPTY METAL DRUMS	80
16	WOOD PALLETS	350
17	DRUM COVERS/PARTS	60
18	PLASTIC DEBRIS	60 CY
19	RUBBER CONVEYOR BELTS	60 CY
20	LEAD OXIDE	40 CY
21	OILY SLUDGE	(3) 55-GALLON DRUMS (4) 5-GALLON PAILS
22	LIQUIDS	(7) 55-GALLON DRUMS
23	WHILE POWDER	(300) BOTTLES
24	STANDING WATER	1 MILLION GALLONS
A, B, C, D	SLAG PILES	9,800 CY

CY = CUBIC YARDS